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## THE INDICATIONS FOR HYSTERECTOMY

The C. Jeff Miller Memorial Lecture

IRVIN ABELL, M.D., and IRVIN ABELL, JR., M.D.  
Louisville

I FIND much pleasure in the honor which has been done me in granting me the privilege of delivering the C. Jeff Miller Memorial Lecture. The long years of friendship which I enjoyed with him but served to confirm my esteem for him as a distinguished teacher and an eminent surgeon and my admiration for him as a man of lovable character and charming personality. The Southeastern Surgical Congress in dedicating an address in his homage at each of its annual sessions honors itself in perpetuating the memory of one whose achievements shed so much luster upon southern surgery.

Since Dr. Miller's life work was centered upon the field of gynecology I felt it would be appropriate to select a subject within his chosen domain and with your indulgence will discuss the indications for hysterectomy. The removal of the uterus with the implications entailed by it constitutes an event to the individual varying in import with the period of her life but after all an event of such moment as to demand adequate justification for its performance. In order that the discussion may follow an orderly and practical arrangement the case histories of 800 consecutive hysterectomies performed from 1926 through 1937 have been studied. Considering the indications for operation in the order of their frequency, fibromyomatous tumors, identified in 497 patients, constituted more than one-half.

### FIBROMYOMAS, 497 CASES

The mere presence of such a tumor does not alone furnish justification for its removal since one not infrequently encounters them of small size, showing no tendency to increase in dimensions, producing

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no symptoms and becoming smaller with the completion of the menopause. Tumors conforming to these specifications should be kept under observation so that changes in behavior warranting a change in treatment may be noted. Tumors of large size, regardless of the absence of symptoms directly attributable to them, are potential sources of danger because of the degenerations to which they are liable and hence are best treated by removal.

The desire for the preservation of the child-bearing function in younger women should be shown consideration and, when local conditions warrant, a conservative myomectomy should be given preference over hysterectomy. While the ideal indication for myomectomy is a single, well-defined intramural or subperitoneal tumor, we have at times in young women practiced the removal of multiple tumors, in one instance as many as five, with the gratifying result of seeing unhampered pregnancies follow; but almost without exception these patients have returned later with growths requiring hysterectomy. Both the patients and we, however, felt that the families acquired during the interim fully justified the course followed.

Sloughing intrauterine fibroids present problems that are best and most safely solved by removing the infected, sloughing tumor per vaginam either in toto or by morcellation, to be followed by hysterectomy at a later date when the infectious process has come to an end. Hysterectomy is to be considered a primary operation when the growths are large, when multiple, when the patient is approaching the menopausal age, when the tumor contains adenomatous tissue, when pressure symptoms are present and when they are associated with adnexal disease, a condition that in our experience obtains in approximately 40 per cent of all cases. It is urgently demanded in women at or beyond the menopause in whom the rapid development of symptoms raises the suspicion of secondary degeneration.

While it is always desirable that indications for operation be determined upon structural change and resultant symptoms, social and economic factors at times demand consideration. In the indigent and in working classes restoration to health with the ability to carry on the ordinary duties of life transcend the desirability of preservation of function; consequently one more readily selects the operation which will ensure this result.

Radium has produced some of its most brilliant results in fields other than those of malignancy and by some has been employed extensively in the treatment of fibromyomas. Its ease of application and relative freedom from danger to life have led not infrequently to its injudicious use in patients whose welfare would be better con-

served by the application of surgery. That radium has a definite place in the treatment of fibromyomas is conceded, but it is submitted that its limitations are very definite. It should never be the procedure of choice in women under 40 unless there are contraindications to the employment of major surgery: the ovarian function is well worth preservation both from the standpoint of well being and from that of assistance during the menopause. A dose of radium sufficient to control the growth of a fibromyoma will surely destroy this function. Granting that the patient is between the ages of 40 and 50 there are certain other requirements to be met: the accompanying anemia should not be too profound and should not show features other than those of the secondary type; the tumor should not exceed in size that of a ten weeks' pregnancy and should show an absence of subperitoneal and submucous nodules of any size; it should not present calcareous or other types of degeneration; and finally, the adnexa should be free of pathology. Within these limitations satisfactory results may be obtained. At times, however, unpleasant sequelae develop in the shape of a stormy, precipitate menopause, bladder and rectal irritation and ulceration, fibrotic stenosis of adherent or adjacent intestinal coils and vaginal changes varying from undue sensitiveness to diminution in caliber with resultant impairment of sexual activity. These disadvantages of irradiation are readily accepted when dealing with malignancy but constitute rather bitter disappointments when the lesion is an elective one.

With a decision for operation made, there remain the choice of routes, the question of ovarian preservation and the retention or removal of the cervix. The vaginal route has a definite place in the aged and in the obese when the tumor is not too large and is not complicated by pelvic inflammatory disease, and at any age when there is an associated prolapse with or without cystocele and rectocele. We have not practiced routine removal of the ovaries, believing they should not be sacrificed unless diseased or unless the distortion of the broad ligament is such that adequate circulation cannot be maintained. It is granted that in some instances their removal is without apparent detriment while in others, particularly in highly nervous patients, their ablation is followed by symptoms distressing alike to the patient and to the operator.

In operating through the vagina the cervix has been routinely removed: in operating through the abdomen transvaginal, transcervical and supracervical amputations have been done. In supracervical amputations a small amount of endometrial tissue is occasionally left, resulting in continued menstruation, which is a source

of annoyance to the patient. This has led to routine transcervical section when any part of the cervix is to be preserved. Our decision for or against preservation of the cervix has been based entirely upon the presence or absence of disease in it. When lacerations, erosions or infections are present the hysterectomy is completed. We have found that when infection in the cervix is present the complete operation is attended with a greater percentage of deep seated infections than is observed in the transcervical type. The incidence of infections in such instances has been materially reduced by removing with the radio knife the infected cervix per vaginam, in whole or in part, with closure of the cervical flaps before attacking the tumor from above. The danger of malignancy developing in the cervical stump has been urged as an argument for panhysterectomy; the added danger of the complete operation in our opinion outweighs the possibility of this risk, particularly when the cervix is free of demonstrable disease. In the present series, seven patients have returned with carcinoma in the stump. In six of these, four of them being nulliparas, more than 5 years had elapsed between the time of the hysterectomy and the development of the malignancy. The length of time which passed before the appearance of symptoms of malignancy would eliminate the possibility of coincident cervical disease having been overlooked, and would indicate that the incidence of malignancy is no greater than in women who have not undergone hysterectomy.

Fibromyomatous disease is not infrequently complicated by pregnancy and in the vast majority of instances it is amenable to conservative management. Growths in the lower uterine segment, which by reason of their location may be expected to interfere with the passage of the oncoming head, may be removed by myomectomy without producing abortion in any appreciable number: those in the upper uterine segments, unless of inordinate size, may be temporarily disregarded since they offer no obstruction to delivery. Multiple growths of moderate size may be kept under observation until the fetus is viable, when a Porro-Cesarean operation both saves the child and rids the mother of her tumor. Another group, of which we have seen six examples, is composed of women who, sterile throughout years of married life, have complacently watched the development of fibromyomatous masses filling the abdomen only to find themselves pregnant in their late thirties or early forties. The rapid enlargement of the tumors soon impairs or destroys any remaining physical efficiency and in our judgment has justified the lesser evil of early removal rather than an attempt to carry them through the dangers of the remaining months of pregnancy.



## PROLAPSE, 88 CASES

In the present series 88 hysterectomies were done in the course of operations for prolapse. Prolapse in itself cannot be said to be an indication for hysterectomy, the removal of the uterus being but a part of an operation designed for the correction of what is really a hernia of that organ through the pelvic floor, usually associated with similar prolapse of the bladder, urethra and rectum. Furthermore its employment is limited to the age periods beyond those of child-bearing, since in younger women the preservation of this function is paramount. In older women with prolapse, not infrequently the cervix and uterine body present disease justifying hysterectomy, but the removal of the uterus is still but a part of the operation and not of itself a primary indication. Elderly women, by reason of their age and organic deficiencies, are ideal subjects for the vaginal route and by far the larger percentage of our 88 patients have been operated on by this method. The prolapse of the uterus makes its removal one of ease after which a diaphragm made of the broad ligaments is employed to support the bladder and vaginal fascia supplemented by plastic operations on the vaginal walls and the perineum. Abdominal hysterectomy has been performed only when the vaginal procedure has seemed impractical and when there were definite indications for the removal of the uterus, such for instance as rather large fibromyomas; in such cases the cervix, round and broad ligaments were utilized for the formation of a supporting shelf.

## PELVIC INFLAMMATORY DISEASE, 75 CASES

The uterus was removed in 75 patients presenting pelvic inflammatory disease. We do not hold to the belief expressed by some that the uterus should be removed in all cases in which the tubes or the tubes and ovaries are removed. As long as it can be shown that the ovaries supply an internal secretion to their host their retention must be an ideal with every conscientious operator and by the same token the preservation of the menstrual function in young women in maintaining the status of their femininity must be given consideration before doing that which sets them apart from their kind. The indications which have guided us in the removal of the uterus in pelvic inflammatory disease have been the implication of the uterus itself in the infectious process, concurrent myomatous or other disease and the presence of such adhesions that when the uterus has been liberated its peritoneal coat was found to have been denuded. In the latter instance its removal is essential to a proper peritoneal toilet if one is to avoid disabling and possibly disastrous adhesions. Pelvic inflammatory disease is essentially a disease of young women and since the sexual apparatus is the basis upon

which much of a woman's life is founded, conservatism should be the keynote in its treatment. Economic factors, especially in those whose livelihood depends on continuous employment, may at times of necessity be decisive in the determination of treatment which may be considered radical.

#### ADENOCARCINOMA OF THE UTERUS, 47 CASES

Forty-seven hysterectomies were done in this series for adenocarcinoma of the uterine body, the operation consisting in the removal of the body, cervix, tubes and ovaries. The commonly noted extension of the disease from the body to the tubes, ovaries and cervix demand that the operation be radical if the best results are to be obtained. That the disease in this location is amenable to radical surgery is shown by a study of an earlier series in which we found 72.8 per cent of the patients alive and well five years and more following operation. Preliminary diagnostic curettage has been practiced in all. Temporary control of bleeding with radium has been obtained in exsanguinated patients followed by rehabilitation before operation; in no such case has the microscope failed to show active cancer in the removed uterus. In a series of 12 patients whose general condition precluded employment of radical surgery, radium treatment alone was used with two six-year cures and recurrence at varying periods in the remaining ten. The almost universally noted satisfactory results from surgical operation would clearly indicate it to be the treatment of choice.

In our experience approximately 25 per cent of the patients with carcinoma of the fundus have shown the presence of fibromyomas. While there is nothing in the cellular make-up of fibromyomas to suggest a causal relationship, it may be that the circulatory and endometrial changes, mechanical irritation and impaired drainage dependent upon the simpler tumors play some part in preparing the ground for the development of cancer. If this could be established it would afford a further basis for advocating hysterectomy in the treatment of fibromyomas. The distortion of the uterine cavity produced by such growths offers a definite impediment to the satisfactory application of radium in carcinoma of the body, interfering with its apposition to the point or place where it is most needed. While series of cases have been reported showing a 50 per cent cure from radium alone, operation, when the patient's physical condition permits, offers the best chance for cure.

#### SUBINVOLUTION, 44 CASES

Subinvolution is given as the indication for hysterectomy in 44 cases. To quote Dr. Miller, subinvolution is recognized "as an

arrest or retardation of the physiologic processes by which the uterus is restored to its previous size, shape and position after childbirth. Both the muscular wall and the endometrium are involved as well as the cervix and the hyperplasia may be permanent." The patients included in this group were multiparas approaching in age the end of the child-bearing period in whom repeated pregnancies and neglected puerperia had left large, overweight uteri, many with lacerated cervixes showing hypertrophy and hyperplasia with cervicitis, associated with varying degrees of misplacements and relaxation of the pelvic floor. Subinvolution, to use an Hibernian solecism, is best cured by prevention during the puerperium. Prophylaxis is probably the most important consideration. Immediate repair of birth injuries, correction of cervicitis, douches, postural exercises, general hygienic measures, cleansing of the uterine cavity of pregnancy products with proper uterine drainage, supplemented when necessary by the temporary use of the pessary constitute the means of greatest efficiency when employed at the proper time. Beyond these nothing short of another pregnancy offers opportunity for the absorption and disappearance of the cellular and vascular change in a subinvolved uterus. In the group under discussion the time element had converted the pelvic changes into permanent pathology amenable only to surgical procedures. The operations consisted in the removal of the overweight, misplaced uteri with such correction of muscular and fascial damage as was indicated.

#### ENDOMETRIOSIS, 30 CASES

Endometriosis is given as the indication for hysterectomy in 30 patients. The etiology of these growths is not clear, one school believing them to result from tubal regurgitation or retrograde menstruation, another to originate in metaplasia of the pelvic peritoneum and still another to develop from misplaced Mullerian tissue. In any event they are found on and in all of the pelvic organs: the uterus, the rectovaginal septum, the tubes, the ovaries, the pelvic peritoneum, the round, broad, utero-ovarian and uterosacral ligaments, the vagina, the sigmoid, the small intestine, the appendix and the bladder. They possess certain characteristics, namely, the presence of tubular glands lined with epithelial cells similar to those of the endometrium, and they undergo cyclic changes in response to the ovarian stimulus in that menstruation occurs in them although in the majority of cases there is no escape for the secretion. This means the formation of multiple chocolate cysts with adhesions of such density as is found in no condition other than malignant infiltration. Before it became recognized that cure required but the removal of all ovarian tissue, many needlessly severe operations

were performed in an effort to ablate visible and palpable deposits. I confess to resections of the rectovaginal septum, the rectum and the sigmoid in an effort to remove deposits recognized as endometriosis or thought to be malignant. With the appreciation that removal of ovarian tissue will cause the disappearance of secondary deposits the operative procedure has been limited to the surgical attack on growths in these organs which sounds and is simpler, and yet at times proves a most difficult technical procedure. The adhesions present no lines of cleavage and must often needs be separated by scissor dissection resulting in a uterine fundus entirely denuded of its peritoneal coat and which may or may not present myomatous nodules. In such instance we have not hesitated to do a transcervical amputation both to eliminate the myomas and to accomplish the peritoneal toilet more satisfactorily. The indication for hysterectomy in endometriosis may be justified in affording the removal of endometrial implants and other tumors and as making possible the coverage of raw areas and thus diminishing the probability of pelvic adhesions. Again bilateral ovarian growths invariably raise the question of possible malignancy and conservative surgery in such a condition means radical surgery.

#### ADENOCARCINOMA OF OVARY, 9 CASES

Adenocarcinoma of the ovary was the primary lesion in nine patients in whom the uterus was removed. In older women with bilateral tumors bilateral oophorectomy with hysterectomy is the obvious procedure. It is readily admitted that the distinction between benign and malignant growths of the ovary is not always easily made upon clinical signs even when exposed to view—and further that borderline cases, even with frozen tissue sections, present difficulties. The decision must be made at the operating table since the exigency of the case does not permit of observation. In younger women, when both ovaries are grossly involved in tumorous growths, the same procedure, i.e., bilateral oophorectomy with hysterectomy, will be in their best interest even though subsequent study may prove the occasional case benign. Excluding dermoids, solid ovarian tumors in young girls are usually malignant and solid tumors occurring after the menopause are malignant in more than half the cases. The responsibility of the surgeon in dealing with ovarian tumors is not a light one and has been aptly defined by Dr. Miller as follows: "The surgeon must consider three possibilities: that the tumor is benign, in which case unilateral removal is sufficient; that the tumor is malignant, in which case bilateral removal of the ovaries and the uterus must be done, without regard to the resulting loss in function; and that the tumor is

a borderline growth, midway between the malignant and the benign varieties, in which case the decision is extremely delicate, since bilateral oophorectomy may be a needlessly radical procedure but unilateral oophorectomy may sign the patient's death warrant."

#### UTERINE DEFORMITIES, 3 CASES

Three instances of uterine anomalies occur in our list and of themselves do not form legitimate indications for hysterectomy. Two were examples of uterus didelphys while the third presented a double cervix. None gave symptoms until the supervision of pregnancy; all had miscarriages and two gave birth to viable children. The recurrent abortions with resultant inflammatory disease in the shape of cervicitis, metritis, salpingitis and cystic oophoritis with more or less fixation by pelvic adhesions, were the determining factors in deciding upon their removal. Could they have been recognized before this series of pathologic events destroyed their efficiency and their function, plastic operations might have made possible their salvage.

#### CANCER OF THE CERVIX, 2 CASES

Two patients are tabulated in our list with carcinoma of the cervix as the indication for hysterectomy. As a matter of fact the carcinoma was but suspected in one and not thought of in the other, the operation being undertaken in one because of fibromyoma and in the other because of chronic pelvic inflammatory disease. In both cases the cervixes presented evidence of disease and were removed, microscopic examination showing epidermoid carcinoma in both. It has been our practice since 1920 to treat all cases of carcinoma of the cervix with irradiation and such as have been removed by surgery have been as in the present instances, associated with lesions not readily amenable to radium. The practical absence of mortality (we have seen but three deaths following radium in these years), the shorter morbidity and the equally good if not superior end results have led us to employ it as the procedure of choice in carcinoma of the cervix.

#### HYPERPLASTIC ENDOMETRITIS, FUNCTIONAL UTERINE BLEEDING, 2 CASES

Hypertrophic endometritis or hyperplasia, characterized by functional uterine bleeding, has until within comparatively recent years afforded a problem which not infrequently required hysterectomy for its solution. With the recognition that the basic factor lies in a disturbance of the pituitary and ovarian hormones, means and methods of treatment have been developed which today are highly



successful both in controlling the bleeding and in preserving function. Unfortunately one still encounters patients in whom the degree of anemia constitutes a jeopardy and in whom hormonal treatment is a failure. Radium, by decreasing follicular maturation, will often act as a specific, particularly if given in menopausal dosage. In young women, when other measures have failed, we have not hesitated to employ it, but always in very small doses because of the threat to function which its usage entails. In the two cases recorded in our list where hysterectomy was done for the control of functional bleeding, both patients were in their thirties, both had important commercial positions, both had been curetted, had been given prolonged hormonal therapy, had been transfused, had had repeated small doses of radium, and both continued handicapped by anemia from continued blood loss. Finally hysterectomy was resorted to as a lesser evil than the destruction of the ovaries by a larger dose of radium, an alternative that would lose its force as an argument in the older age group.

#### CHORIONEPITHELIOMA, 3 CASES

Chorionepithelioma is an unusually rare type of malignancy and is peculiar in that it originates in fetal structure, and yet attacks the mother. Marchand first described it in 1895 under the term *deciduoma malignum*. I was working in his laboratory when he published his second paper in 1898 in which he proved its origin to be in the chorionic villi and gave to it the name of chorionepithelioma. During all these years I have looked for it and have found but five instances, three of which are included in the present series. Four followed mole formation and one pregnancy at full term; four occurred after the first pregnancy and one after the eleventh pregnancy. In its diagnosis the most important differentiation is to be made between it and infected, incomplete abortion on the one hand and infected secundines following labor at term on the other. Pregnancy products are permanently removed by the curette while in chorionepithelioma the masses rapidly reform with recurrent bleeding. The high incidence of chorionepithelioma after mole pregnancy raises the question as to the best prophylactic treatment of the latter to prevent its occurrence. If the mole has attained appreciable size, the cleansing of the uterus is best accomplished through an opening in its anterior surface after exposing it by abdominal incision. Ocular inspection and digital palpation will not only insure thorough evacuation of all mole tissue but also allow the detection of malignant change if present. In the event that the patient is approaching the natural limitation of fertility her safety will be enhanced by hysterectomy even though no malignancy can

be demonstrated. When demonstrated, panhysterectomy with removal of tubes and ovaries offers the only means of cure.

In concluding this discussion of the indications for hysterectomy it is but proper that the preoperative preparation and the risk of operation be mentioned. None of our cases has been considered as an emergency, each patient receiving the preparatory treatment warranted by her condition. Obesity, emaciation, cardiorenal disease, hypertension, diabetes, emotional imbalance, exsanguination and anemia have all been encountered and combated by appropriate means—rest, food, transfusions, glucose, diet, insulin and cardiac therapy. In the 800 cases there have been 16 deaths, a mortality of 2 per cent: 2 from bronchopneumonia, 2 from hepatic toxemia, 1 from pulmonary infarction, 1 from pulmonary embolus, 1 from coronary occlusion, 1 from postoperative psychosis, 1 from uremia, 2 from septicemia and 5 from peritonitis. In the seven in whom the local infection was directly responsible for death the operation was performed by the abdominal route, 3 being transcervical and four transvaginal amputations.

## APPLICATION OF AN ELECTRICALLY NEUTRAL METAL IN FRACTURES

CHARLES S. VENABLE, M.D., F.A.C.S.

San Antonio

**T**HE question of how and why one metal may be depended upon to do its job in internal fixation of fractures when another may not is a very intriguing one to me and I trust will be of interest to you.

As this discussion will be on the clinical application of the subject, I shall spare you the details of the delivery room of the research done by Stuck and me,<sup>1</sup> but I think it will interest you more if I answer the questions of why and how one metal behaves differently from another when placed in the body.



Figure 1. Eight months after reduction, showing complete union and no changes about vitallium nail.

Practically all metals that we see and use for any mechanical purpose are alloys or mixtures of two or more basic metals. Your

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watch is 18 carat gold at best; pure platinum is soft, as is pure silver and so on.

In these different metals there lies a difference in electrical potential so that each one is either attractive or repulsive to the other and so there is established a positive and negative pole. Such potentials of difference are increased or decreased directly in accordance with the arrangement of each by the law of the electromotive force



Figure 2. Comminuted fracture lower end tibia with displacement foot, backwards. Fragments reduced after tenotomy and fixed with two vitallium screws.

that each may have, which is a fixed and known quantity whether they be on the positive or negative side in the E. M. F. table.

(So the auto battery is based upon the potential difference as between zinc and lead which with the addition of fluid become electrically activated. Without the presence of moisture, there would be no current. That is a galvanic cell.)

But if such an alloy is kept perfectly (100 per cent) dry, there is no molecular change as between its components; it is electrolytically silent. But in the presence of moisture electrolytic action is

begun when such moisture or fluid (the electrolyte) attacks it. An alloy may be actively affected in an acid medium and not at all or less so in an alkaline medium and vice versa, but only when entirely unaffected by the electrolyte (the fluid in which it is exposed) may that particular alloy (metallic material) be considered electrically neutral or passive in that fluid. When such is the case, no change takes place and there is no corrosion or rust, as there is no electrolytic action. *Electrolysis precedes corrosion.*



Figure 3. Fracture of the neck of the femur fixed with vitallium screw.

To avoid further chemical and physical detail, permit me to say that such passivity may and does often occur by the formation of a molecular veil upon the surface of the metal which while present protects it from action upon it of the electrolyte—but when this molecular veil is washed or rubbed off, electrolytic action again begins. But if such a veil is resistant and remains so, that metal is electrically silent or passive in that environment.

This explains why metals we have used in the past to fix fractures occasionally remain silent, showing but little corrosion and little



or no bone change due to the effect of electrolytic action, while many have corroded badly with a lot of bone necrosis and often non-union through decalcification.

Until we came across an alloy of cobalt, chromium and molybdenum called vitallium, which attains an instantaneous passivity in normal salt solution, blood serum and body fluids in vivo, and retains this electrical neutrality after agitation and friction, we had proven



Figure 4-a. Comminuted fracture of the upper end of the tibia, spreading the external tuberosity beyond weight bearing line.

nothing except that electrolysis was present in all the other materials tested, including the stainless steels (V2a - K2a, etc.) accompanied by detrimental bone changes and tissue reaction.

The rustless or stainless steels had seemed to serve best up to this time, but with them passivity cannot be depended upon, while throughout all of our experiments and nearly three years of clinical experience, vitallium remains entirely unchanged by body fluids, causes no bone necrosis or demineralization and maintains indefinitely the mechanical fixation required.

The deduction therefore is that if and when a metal becomes and remains passive in vivo and causes no bone change or demineralization, or in other words is electrically silent, and one that is electroactive undergoes corrosion and causes bone necrosis, electrolysis is the controlling factor in this direct application of metals in fracture fixation.



Figure 4-b. Fragments of the upper end of the tibia pulled together in a weight bearing line, with vitallium screw.

We have now reports from all parts of the country that the expression of others is the same as ours in substantiation of this opinion.

We, as others, have removed several appliances to observe if and what change has taken place that might not have been seen by x-ray and find practically none. Screws must be unscrewed, cannot be picked out; nails must be pulled out, not lifted out; no excess callus, which is the product of irritation, is present; the vitallium is untarnished, uncorroded; there is no collection of discolored fluid about the site—no tissue change macroscopically or microscopically.

Such procedures have been deliberate for observation by us and others, not because of any apparent clinical necessity. Our opinion

is that these appliances may be left indefinitely without fear of subsequent disturbance.

In conclusion I wish to say, to emphasize, that just because we may now have a dependable material at hand which makes open reductions easy, license to unnecessary internal fixation should not be assumed.

It is also important to recognize and appreciate the difference between an old fracture and a fresh fracture: that in some old fractures because of attenuated blood supply, simple freshening of the ends and internal fixation may not be sufficient, and an autogenous graft is needed. It is possible to use a vitallium plate for the purpose of greater stability in conjunction with a graft or hold the graft with vitallium screws. Such choice and procedure, however, are matters of surgical acumen.

I hope our experiments and experience may result in the establishment of a principle that may be useful, but the application must always be based upon sound surgical judgment.

#### REFERENCES

1. Venable, C. S.; Stuck, W. G.; et al: The Effects on Bone of the Presence of Metals: Based upon Electrolysis, *Tr. South. S. A.* 49: 294, 1937; *Ann. Surg.* 105: 917 (June) 1937.
2. Venable, C. S.: Osteosynthesis in the Presence of Metals: Studies on Electrolysis, *South. M. J.* 31: 501, 1938.
4. Venable, C. S.: Electrolytic Action Between Metals as Used in Bone Surgery, *Arch. Phys. Therapy* 19: 285 (May) 1938.
5. Venable, C. S., and Stuck, W. G.: Electrolysis Controlling Factor in Use of Metals in Treating Fractures, *J. A. M. A.* 111: 1349 (Oct. 8) 1938.

## OPTIMUM PERIOD FOR DELAY OF OPERATION FOLLOWING APPENDICITIS COMPLICATIONS

HOWARD MAHORNER, M.D., and RICHARD VINCENT, M.D.

New Orleans

**I**N the United States annually there are some twenty thousand deaths attributable to appendicitis. If the general mortality of appendicitis is as much as 3 per cent, there must be over 600,000 cases of acute appendicitis annually in this country, an astounding number of patients with a serious surgical disease. This fact alone justifies the continued interest and intense study of the disease and its complications in an effort to reduce the morbidity and mortality resulting. As a matter of fact, more intelligent action on the part of patients affected with the disease might easily reduce the mortality to one-tenth of the present figure and even without this intelligent action on the part of the patients, more careful management of complications of appendicitis by the profession could probably reduce the mortality one half.

The conservative management of appendicitis complications has undoubtedly solved to a certain extent one problem by reducing mortality in that group, but it has raised another problem concerning the future morbidity in these patients. In certain instances in which appendiceal complications were treated conservatively with delay of operation, we observed intra-abdominal inflammatory masses which remained without resolution an inordinately long time, a month, two months, and in some instances over six months. It is obvious from reports in the literature that the trend has been toward conservative management of appendicitis complications. This method has been adopted by the great majority of those who have stated their preference. In few instances, however, has it been definitely stated how long a period after the occurrence of complications one should wait before proceeding with the operation, appendectomy, which is generally recommended even if the complications and disease have subsided entirely.

In the dog an inflammatory mass or abscess invariably forms after experimental ligation of the appendix and its blood supply. The dog is resistant to peritonitis so induced, and within four weeks (but not in three weeks) the inflammatory process subsides leaving the peritoneal cavity free of any trace of inflammation. That such is not the universal course of the disease in man is amply attested

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From the Department of Surgery, Tulane University School of Medicine and The Charity Hospital of Louisiana, New Orleans.

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by the fact that in certain instances masses persist over a long period of time.

Cases of acute appendicitis admitted to Charity Hospital of Louisiana for a period of one year, July 1, 1937, to July 1, 1938, were studied. There were 544 cases and of these 26.3 per cent (143) had complications on admission, that is, the disease was not limited to the appendix. Seventy-seven of the cases or 14.2 per cent had general peritonitis on admission and 66 or 12.1 per cent had localized peritonitis or abscess in the right iliac fossa. In studying these cases certain interesting features besides the complications were noted. The mortality for the uncomplicated group was 0.5 per cent; for those with generalized peritonitis 37 per cent and with localized peritonitis 10 per cent.

#### INCIDENCE OF APPENDICITIS IN 5 YEAR AGE PERIOD 543 CASES

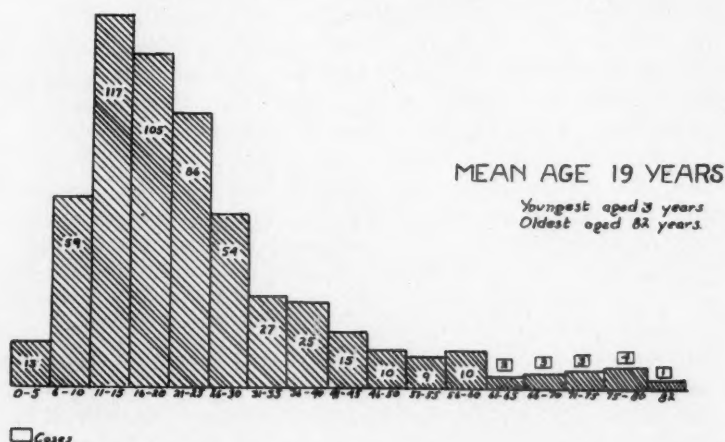


Fig. 1. Chart showing the relative incidence of appendicitis in five year age periods. Appendicitis is a disease of youth.

#### INCIDENCE

The age incidence of appendicitis is interesting and from the etiologic standpoint is significant. If the cases are grouped into periods of five years, the greatest number of cases occurring in any one group is in the period between 11 and 15 years; 41 per cent of the cases occur between the ages of 10 and 20. The mean age in 544 cases was 19 years, and the greatest number of cases occurring in any one year-age period is in the fourteenth year. The significance of this of course is unexplained, but it may have something



to do with the pathogenesis. The occurrence of appendicitis in adolescence and early adult life may indicate on the one hand its frequency during the period when lymphoid hyperplasia, though not at its most intense activity, is nevertheless still present. Another possibility likewise presents itself as an explanation of the occurrence of the disease usually during youth or adolescence. Growth may induce mechanical obstruction when there are retroperitoneal attachments and peritoneal and mesenteric kinks. The relative descent of the cecum may further angulate an appendix attached retroperitoneally or kinked by a mesenteric attachment. There is good reason to believe that most cases of acute appendicitis are mechanical and obstructive in origin. At operation for acute appendicitis, retroperitoneal displacements of the appendix and other definite anatomic factors which cause obstruction are encountered in a notably high percentage of cases. Such malpositions of the organ cause inefficient emptying, with partial or sudden complete obstruction resulting in inflammation. Frequently kinks occurring in the middle of the appendix produce obstruction and acute inflammation is found in the organ only distal to the location of the kink, demonstrating without question in these instances that appendicitis is due to obstruction of the lumen of the organ. Other methods of obstruction, particularly in youthful individuals, may be hyperplasia of lymphoid tissue in the organ or catarrhal inflammation of the mucosa and intraluminary concretions or foreign bodies. Because these possibilities in the pathogenesis of acute appendicitis had impressed us so firmly, the number of cases in which the operative sheet recorded retrocecal appendices or some other definite mechanical anatomic obstructive factor was noted. In 388 uncomplicated cases of acute appendicitis the records of 35 or 9 per cent stated definitely that the appendix was retrocecal. In an additional 31 cases some mechanical obstructive factor was noted by the operator, thus, 17.3 per cent of cases had an anatomic mechanical factor noticed. Undoubtedly these percentages would be higher if one carefully looked for obstruction and recorded it when present.

#### SYMPTOMATOLOGY

The sequence of symptoms in acute appendicitis is: pain, nausea, vomiting, tenderness, and rigidity in the right lower quadrant, leukocytosis and fever. It has also been stated repeatedly that the diagnosis of acute appendicitis must be regarded with suspicion in any patient in whom the pain begins and persists in the right lower quadrant of the abdomen. Contrary to this contention the site of onset of pain in almost one-half of the cases in this series was stated to be the right lower quadrant. The initial pain was in the right lower quadrant of the abdomen in 239 patients, whereas in 202 the site

of onset was the epigastric or umbilical region. In the remainder of instances pain began either generalized throughout the abdomen or in the lower abdomen. One rare onset of pain was in the right axilla with radiation down to the right lower quadrant of the abdomen. One might contend that lack of careful history taking is the cause of such a high incidence of pain beginning in the right iliac region or of pain beginning there at all. Granted that careless anamnesis is the explanation of the apparently high percentage of onset in the right lower quadrant, nevertheless, in certain instances the pain definitely begins, first, in the right lower quadrant and persists there without being referred to other regions of the abdomen. Whereas in practically every instance pain was the initial symptom of disease, in a few instances nausea was stated to precede pain. Though these cases might be expected to be in children, four of the six were in young adults. Tenderness of course is the outstanding objective finding in the disease. It is a constant finding in acute appendicitis and the site of its most frequent occurrence is Lanz's point at the junction of the right and middle thirds of a line between the anterior superior iliac spines.

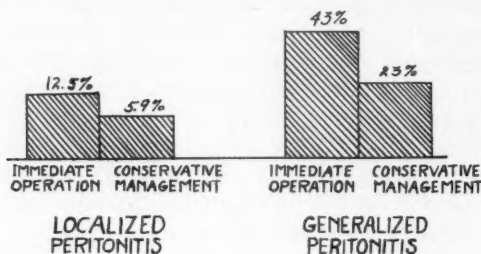
The leukocytosis of acute appendicitis may be mild or the leukocyte count may be entirely normal. A leukocytosis of over 15,000 generally indicates a complication, but counts of 20,000 and even 30,000 are sometimes encountered when the disease is still confined to the appendix. The higher counts in uncomplicated cases occur mostly in children.

Cathartics are a large factor in the mortality of acute appendicitis. In the entire series of cases, 145 stated definitely that they had received cathartics. The mortality in this group of cases was 11 per cent. Sixty-six patients stated definitely that they had not received cathartics and of these one (1.5 per cent) died. There was no mention in the record of cathartics in 333 cases. Eighteen of these died, a mortality of 5.5 per cent. Almost one-half (45 per cent) of the cases of generalized peritonitis received one or more cathartics and in this group receiving cathartics the mortality was 37 per cent. One-half of the cases of localized peritonitis (51.5 per cent) received cathartics, and in this group the mortality was 9 per cent. Of the 35 patients who died 45.7 per cent stated definitely that they had taken cathartics. This clearly indicates that if patients did not take cathartics, the mortality would be greatly reduced.

#### PERITONEAL COMPLICATIONS

*Localized Peritonitis.* The diagnosis of appendicitis complications, that is, the spread of the disease beyond the appendix itself is not always easy. Localized peritonitis may be present not only

when a mass is found in the right iliac region, but in other instances when certain signs and symptoms indicate peritoneal infection in that region. The diagnosis may be based upon the characteristic history and objective findings of acute appendicitis and in addition in the absence of a mass, extremely marked tenderness and rigidity diffused throughout the right lower quadrant of the abdomen or throughout the lower abdomen, with a rapid pulse (above 90 or 100) and a sharp febrile reaction 101 to 103. These all suggest a spread of the infection beyond the appendix itself. Distention may or may not be present. The patient looks sick. The differentiation



### COMPARATIVE MORTALITY FOR APPENDICITIS COMPLICATIONS

Fig. 2. Chart showing comparative mortality for immediate operation and conservative management of localized peritonitis and generalized peritonitis complicating acute appendicitis. Cases considered moribund on admission were excluded.

of localized from generalized peritonitis depends on the less intense febrile reaction and tachycardia in the former and more circumscribed abdominal objective findings.

There were 66 patients with a diagnosis of localized peritonitis on admission. Immediate operation was performed in 32 of these with four deaths, a mortality of 12.5 per cent. Conservative management was used in 34 with two deaths, one of which was a death on the table presumably from an anesthetic. Mortality for the conservative management of localized peritonitis or abscess was 5.9 per cent. In this group of 66 patients with localized peritonitis eighteen had a mass in the right iliac fossa on admission. Three additional ones developed masses under conservative treatment, 28 of these cases were considered localized peritonitis on admission and had no mass and 20 had a preoperative diagnosis of uncomplicated appendicitis, and localized peritonitis or abscess was discovered at operation. In the group of cases admitted as localized peri-

tonitis or abscess, appendectomy in the presence of this complication resulted in three deaths in 34 cases or 8.8 per cent mortality. Incision and drainage of abscess only resulted in two deaths in 16 cases or 12.5 per cent mortality. All operative procedures for localized peritonitis or abscessed cases admitted with this complication had a mortality of 10 per cent. No operation in 16 cases resulted in one death or 6.25 per cent mortality. There was only one death in 20 cases when the preoperative diagnosis was acute appendicitis and localized abscess was found at operation, but when the preoperative diagnosis was localized peritonitis or abscess and in spite of this an appendectomy was performed, the mortality was 20 per cent or three deaths in 15 cases. These figures rather clearly indicate that in the hands of a large number of surgeons (34) conservative methods of management of localized peritonitis resulting from acute appendicitis gives a mortality much lower than immediate operation in a comparable group of cases.

*General peritonitis.* Seventy-seven of 544 cases had generalized peritonitis resulting from appendicitis. Thus this complication was present in 14.2 per cent of the cases. It developed in the hospital postoperatively in one uncomplicated case of acute appendicitis and resulted in death, and it developed as a complication in two cases of localized peritonitis both of which were operated on prior to the onset of generalized peritonitis.

Generalized peritonitis complicating acute appendicitis is usually not difficult to diagnose. Its diagnosis is less difficult than to differentiate localized peritonitis complicating acute appendicitis from uncomplicated appendicitis. In generalized peritonitis the patient looks sick. The temperature is usually 103 or over, pulse rate is rapid, over 100, and the leukocytosis is high. Objectively, distention is usually present. On auscultation peristalsis is invariably absent. The latter point is of importance because regardless of what has been stated concerning it, peristalsis is frequently audible in the presence of acute appendicitis when the inflammation is confined to the appendix itself. Moreover, from the objective standpoint, tenderness may be generalized; but its absence is no indication that peritonitis is not present, because in certain cases the onset of general peritonitis is attended with the subsidence of pain and tenderness. Rigidity is present and generalized in the early stages of generalized peritonitis, but begins to subside with increasing distention and with more severe involvement of the peritoneal cavity. The most striking feature in differentiating localized peritonitis and generalized peritonitis is the apparent sickness of the patient, that is, the degree of fever and reactionary leukocytosis and pulse rate and the more intense objective findings when generalized peritonitis is present. How-

ever, in either localized or generalized peritonitis complicating acute appendicitis, the immediate management is much the same.

The mortality for the group of patients with generalized peritonitis was 37.7 per cent (29 deaths). Immediate operation was performed in 56 cases with 24 deaths or 43 per cent mortality. When operation was delayed, excluding patients considered moribund (8), the mortality was 23 per cent, three deaths in 13 cases.

Residual abscess developed as a result of general peritonitis in 19 cases, 24.7 per cent and in 21 sites, two of the cases having multiple abscesses. Right iliac fossa abscess developed in ten cases (13 per cent), culdesac abscess in nine cases (12 per cent), and subdiaphragmatic or subhepatic abscess in two (2.6 per cent). One of the cases in which right iliac fossa abscess developed following generalized peritonitis was a postoperative complication. This was the only postoperative iliac fossa abscess in the entire series. In the group of cases in which abscesses developed in the iliac fossa following general peritonitis, the mortality was 40 per cent.

These figures indicate that in cases with generalized peritonitis on admission, regional peritoneal abscess are frequent residuals. Prolonged conservative management until the signs of acute inflammation have subsided is essential in the reduction of mortality. Operation should be performed as an interval appendectomy following the subsidence of the acute symptoms or as an operation necessitated by the persistence of complications, that is, inflammatory masses.

*Localized inflammatory mass or abscess.* Intraperitoneal inflammatory masses are in reality objective findings detectable by palpation. The presence of a mass does not necessarily indicate an abscess, for inflamed adherent loops of intestine and omentum without the presence of pus may give the objective impression of a mass. An inflammatory mass may progress to an actual abscess or it may undergo resolution without suppurating. In rare instances marked fluctuation may indicate the presence of an abscess clinically, but usually the actual differentiation of the two depends on obtaining pus at operation or by aspiration.

Localized inflammatory masses or abscess in the peritoneal cavity occurred in the entire group of 544 cases in 51 sites and 49 (9 per cent) of the cases. That this complication is serious is evidenced by the fact that in these 49 patients the mortality was 25.6 per cent. Masses were distributed as follows: iliac fossa, 30; culdesac, 17; subdiaphragmatic and subhepatic, 2 each. The group of 66 cases of localized peritonitis had the following distribution of 26 inflammatory masses: 20 in the right iliac fossa; 4 in the culdesac; and



2 in the subdiaphragmatic region. Seventy-seven cases of generalized peritonitis had the following number of residual abscesses: 10 in the right iliac fossa, 9 of which were preoperative, one postoperative; 9 in the culdesac; and 2 in the subdiaphragmatic region. Thus, it is seen that culdesac space infection is as frequent a residual of generalized peritonitis as right iliac fossa abscess. Subdiaphragmatic space infection developed in two cases of general peritonitis. In the uncomplicated group of 401 cases of acute appendicitis, four or one per cent developed culdesac infections, but no others developed regional inflammatory masses.

*Right Iliac Fossa Mass.* Right iliac fossa inflammatory mass or abscess occurred in the entire series of 544 cases in 30 instances, 5.5 per cent. The mortality for operation, either appendectomy or drainage, was 27 per cent (6 deaths in 22 operations). No operations in six cases resulted in no deaths.

Mass in the culdesac space developed in seventeen cases, 3 per cent of the entire series. Seven of these were preoperative culdesac infections and ten were postoperative complications. Culdesac infection is characteristically a postoperative complication. It developed in four patients with uncomplicated acute appendicitis following operation.

The mortality in cases with culdesac infection was 18 per cent (3 deaths). Operation was performed in ten cases with three deaths (30 per cent). Seven patients in the group were not operated on. They recovered, the mass having subsided.

The diagnosis of culdesac space infection is usually easy if one thinks of it as a possible complication. It is generally found either as a postoperative complication resulting in the persistence of fever or as a residual abscess in general peritonitis. Patients with culdesac space infection continue to run unabated fever 101, 102 or less. There generally is distention, and tenderness may be found low in the suprapubic region of the abdomen. A mass may be felt just above the pelvic brim. With other evidence, involuntary evacuation of feces is suggestive of the presence of culdesac infection; rectal examination in the male or female discloses a very relaxed sphincter muscle. The tone of the sphincter is practically absent. It feels like a large dilated ring. On digital examination above and anteriorly, a mass is found in the culdesac. This is generally low enough easily to permit palpation without question. It is tender and may or may not be fluctuant. It generally is not fluctuating when the diagnosis is made. The treatment consists in conservative management until a fluctuating area is discovered or until an abscess points anteriorly and the evidences of infection show no tendency of abating. When fluctuation is present in the rectum the mass should first be aspirated

through the anterior rectal wall to determine the presence of pus. If pus is obtained incision with a bistoury through the rectal wall and insertion of a hemostat should result in the evacuation of the abscess.

Infections in the subdiaphragmatic space are not common. They occurred in only four, .7 per cent of the cases. In two of these instances the abscess was in reality subhepatic and thus true subdiaphragmatic space infection in this series was extremely rare. In the two cases with subdiaphragmatic space infection, one was drained and one was not drained, both died. In the two cases of subhepatic space infection the abscess was drained in one and the patient lived. In one in which the abscess was not drained the patient died. The mortality for this complication was 75 per cent.

#### PERSISTENCE OF MASSES

Masses do not always subside spontaneously; they persist for an inordinately long period in at least one-third of the patients in which they occur. The persistence is not always due to presence of an abscess. We have found after periods of 2 months, 6 months, 7 months, markedly fibrosed subacutely inflamed masses, free of all pus. If such masses persist clinically it may become technically more difficult to operate than if operation were done earlier when adhesions are more easily separated. This is one reason that some definite limit should be placed on the period of delay of operation following appendicitis complications. In 21 cases in which a mass was present on admission or developed in the hospital in the group of localized peritonitis or abscess, the length of time from the onset of symptoms to operation or until the patient was well enough to be dismissed from the hospital was between three and four weeks in four cases and over four weeks in seven cases; thus, one-third of the patients with masses had a persistence of the mass for over four weeks. In one instance the mass was present for over two months and in one case the mass was presumably present for seven months. In 10 right iliac fossa masses which developed following general peritonitis, the period of time from onset of symptoms to operation on the masses or subsidence, sufficient to permit dismissal from the hospital was over four weeks in three cases. Thus again one-third of the cases had a persistence of the mass for over four weeks. Undoubtedly more cases if not operated on earlier would have had a persistence of masses over a period of four weeks, proving that at least one-third of the iliac fossa masses, if left alone, will persist an appreciable length of time. Although it has been clearly shown that operation near the inflammatory stage of development of a mass is a dangerous procedure, more dangerous than the conserva-

tive management at such a period, operation is not as dangerous after the inflammatory signs of fever and elevated pulse rate have subsided. After a period of approximately four weeks, thin fibrous or fibrinous adhesions become relatively firm if they are allowed to persist, and within that length of time it is easier to separate adhesions; therefore, if the systemic evidence of the inflammatory process has subsided, the patient should be operated on at least by the end of four weeks and not permitted to go out and return with a persistence of an inflammatory mass more fibrous than before or with a recurrence of appendicitis in the interval.

Forty-eight cases in the entire series were dismissed without appendectomy. Though these patients should have returned for operation only one did so voluntarily. Two patients returned twice each because of recurrent appendicitis complications and one other patient returned with another attack of acute appendicitis. Thus 6 per cent returned with another attack of appendicitis, a sufficiently high incidence to justify advocating appendectomy routinely in patients recovering after conservative management.

Patients who have recovered from appendicitis complications under conservative management should preferably be operated on without being dismissed from the hospital, because so many of them fail to return for subsequent operations. When it is feasible, that is, when the acute phase of the complications have subsided, appendectomy should be done at some time within four weeks after the onset of the complication.

#### SUMMARY AND CONCLUSION

In 544 cases of acute appendicitis admitted to Charity Hospital, New Orleans, in a period of one year, 26.3 per cent of the cases had extension of the infection beyond the appendix at the time they were admitted, that is, they had either localized peritonitis or generalized peritonitis. The mortality for the entire group of cases was 6.8 per cent, for the uncomplicated group 0.5 per cent, for those with generalized peritonitis 14.2 per cent, and for the group with localized peritonitis 12.1 per cent. Conservative management with appendicitis complications gave lower mortality than when immediate operation was done in a comparable group. The two factors having great influence on the mortality of acute appendicitis are the patients' management of their illness before they come to the doctor, that is, delay and the taking of cathartics, and the surgeon's management of complications after the patient is under his care. One-third of peritoneal inflammatory masses persist over four weeks. Appendectomy should be done in the conservatively treated cases within four weeks after the onset of the complications.

## VESICOVAGINAL FISTULA

### The Suprapubic Approach

ROBERT W. MCKAY, M.D.

Charlotte

**T**HE subject of vesicovaginal fistula is indeed an old one as it has occupied the attention of surgeons for the past two hundred years or more. As early as 1663 Roonhuysan advocated closing them by means of sutures. In 1855 the famous Sims brought out his technic which was the first real advance in logically correcting this distressing malady. His method of vaginal approach, using metallic suture material, the position in which it is done and the instruments he devised for perfecting it are well known to every gynecologist. Sims and his pupil, Emmet, brought out the following basic principles: That the badly infected fistula, bladder and vagina should first be brought into healthy condition by treatments; that the edges of the fistula when approximated should be loose and not under any tension at all and, most important, that the bladder should be kept continually emptied by his specially devised catheter. These three principles should still be employed regardless of the type of operation if success is to be obtained.

Mackenrodt was the first to advocate the complete dissection of the bladder away from the vagina in order to accomplish closure of the vesical and vaginal portion of the fistula separately. It is this freeing of the bladder from the vagina at the area of the fistula which enables the modern operator using the vaginal approach to effect a closure in which the two suture lines do not lie in the same vertical plane.

Since this discussion deals only with the suprapubic approach to the problem it is not my purpose to elaborate on the various technics of the vaginal approach to vesicovaginal fistula nor to minimize the use of the vaginal approach in the hands of skillful operators. I am bringing forward simply a modification of the technic and reporting five cases of vesicovaginal fistula operated on by the suprapubic route.

In 1927 Hugh Young reported a case of persistent vesicovaginal fistula which had previously been operated upon eleven times unsuc-

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cessfully. I was fortunate enough to be an assistant at this operation. By using the suprapubic method of approach and adequate transvesical drainage following the operation the patient was cured by Dr. Young's first attempt.

#### TECHNIC OF THE OPERATION

The location of the fistula is first determined by cystoscopy. Many writers state that it is difficult to cystoscope these individuals if the fistula is of any size, since the irrigating fluid immediately flows out of the bladder. It is only necessary however to fill the bladder sufficiently to raise the anterior from the posterior wall and if the cystoscope has a large enough water inlet little trouble should be experienced in dealing with the larger fistulas. As to the location this can be seen through the cystoscope or a catheter can be passed through the fistula into the vagina and then a vaginal speculum can be passed into the vagina and the exact location determined.

By far the greater number of these patients have a markedly alkaline urine, infected with colon bacillus and secondary invaders. Incidentally many have frequent intermittent attacks of pyelitis from ascending infection. Appropriate urinary antiseptics combined with irrigations of the bladder and douches should therefore be used.

After the patient is brought into the proper condition for the operation the following technic is employed. The patient is given a spinal anesthetic which gives greater relaxation and thus renders the operation simpler. Since the bladder is collapsed it cannot be sufficiently dilated with either fluid or air. A sound is passed to act as a guide and the usual suprapubic incision is made. The point of the sound pressing anteriorly is felt and by having the assistant push upward on the sound the peritoneum is easily stripped off the collapsed bladder. The incision in the bladder is then made sufficiently large to accommodate self-retaining retractors. The area of the fistula is next located. If it is near the ureteral orifices a ureteral catheter should be passed up the ureter insuring its safety during the operation, an advantage which one does not have when using the vaginal approach.

A safety pin is passed down through the fistula using a sharp pointed Halsted clamp. By maneuvering the pin it can then be grasped in its middle and used as a tractor to pull the operative field up into the wound. In fistulas too small to admit the safety pin readily, a piece of long silkworm gut can be threaded through the fistula and its end attached to the middle of a bent pin by the assistant working in the vagina. The silkworm gut technic, however, is only used when the pin does not easily pass through the fistulous opening. An incision is next made around the margin of the fistula sufficiently wide to remove the encircling scar tissue. Following this the bladder is dissected free from the vagina. A purse string suture of No. 1 catgut is then taken in the margin of the vaginal portion of the fistula; the ends of the suture are passed down to the vagina and are tied, as shown in the illustration, turning the vaginal portion of the fistula outward into the vagina. A similar purse string suture is then used to close the muscular wall of the



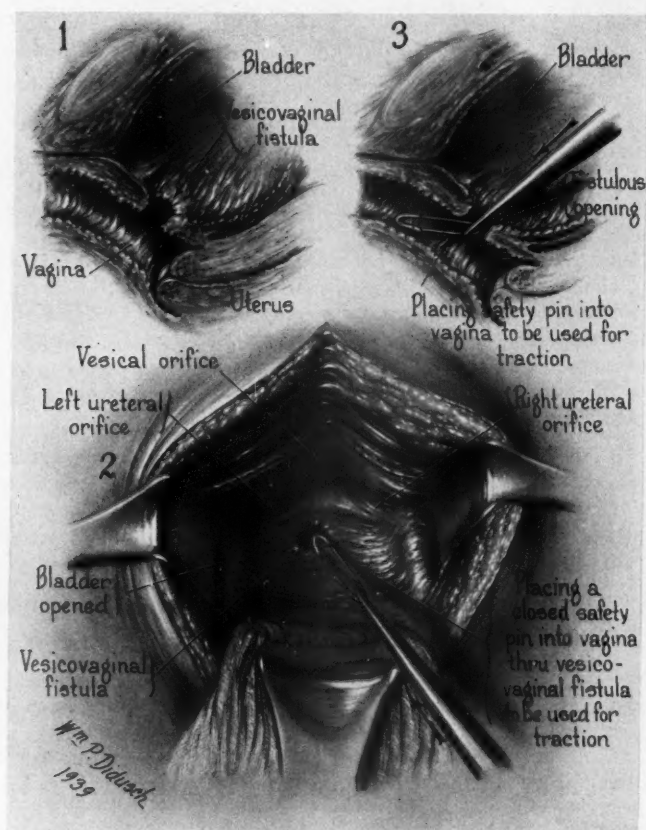


Plate 1. Fig. 1. Location of the vesicovaginal fistula in the bladder.

Fig. 2. Bladder is opened wide enough to obtain sufficient room for operation. A safety pin is being passed through the fistula.

Fig. 3. The safety pin is so manipulated that it can be grasped in its middle.

bladder. The mucous membrane is then dissected up as a third flap and, to obviate tension, is closed by a mattress suture of No. 1 chromic catgut.

By the operation described the scar tissue poor in blood supply has been removed, the vaginal mucous membrane is turned outward into the vagina, the muscular wall of the bladder is closed as a second line of defense and the bladder mucosa rich in blood supply is approximated without tension above the two previous suture lines.

Great care should be exercised to avoid tension. This can only be done by freeing sufficiently the three separate layers.

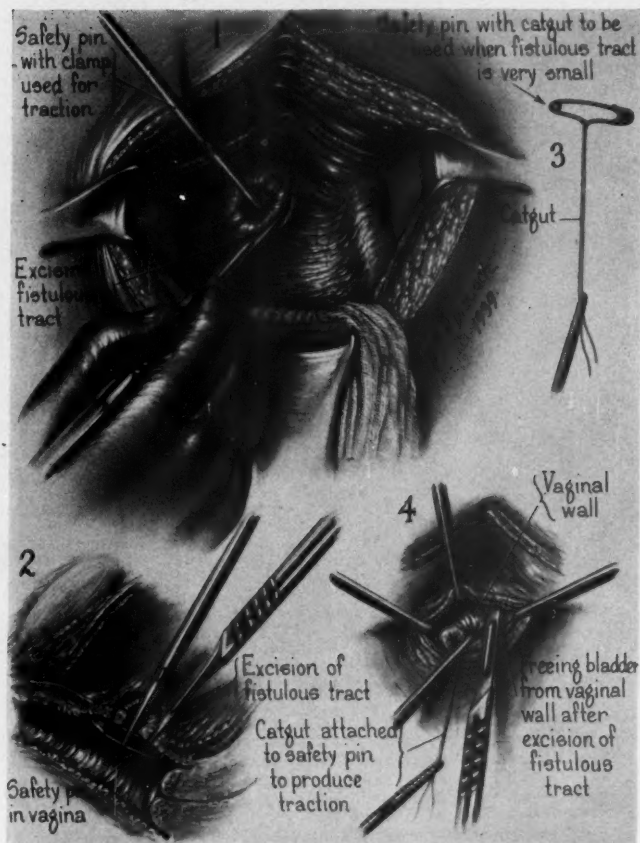


Plate 2. Fig. 1. The safety pin is grasped in its middle and the indurating scar tissue immediately adjacent to the fistula is excised with a circular incision.

Fig. 2. Showing the fistula being excised down on the safety pin.

Fig. 3. Showing the bent pin with silk worm gut attached, used in small fistulae.

Fig. 4. The bladder musculature is being dissected loose from the vagina with free flaps.

Probably the two greatest factors which enabled Sims to get such good results were that he closed fresh edges of tissue without tension and, most important of all, he prevented the development of vesical tension by using a metallic catheter which was easy to keep open. In the five cases reported in which this technic was used, I think the success obtained was due in great measure to the large (No. 40) suprapubic catheter. A No. 20 DePezzer was placed in the urethra as a second safety valve.

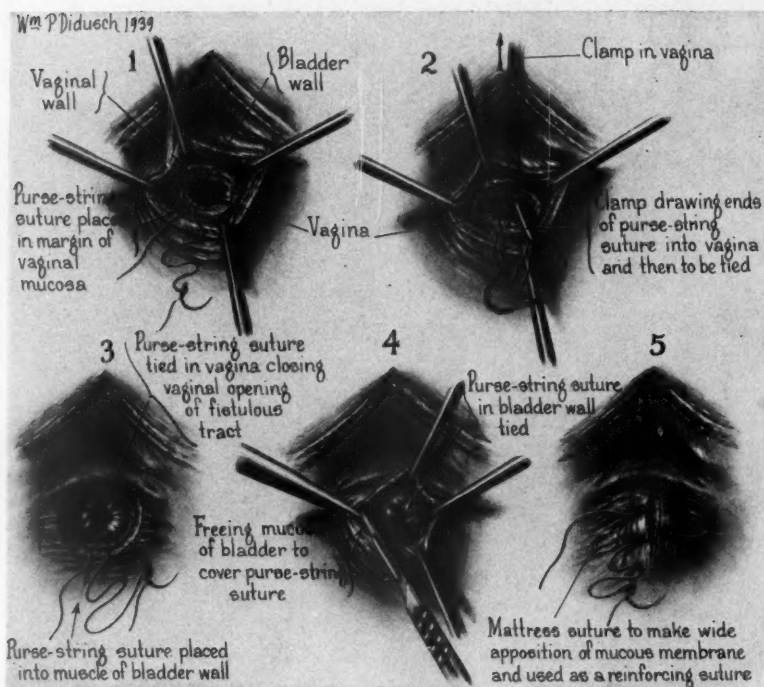


Plate 3. Fig. 1. A purse string suture has been placed around the vaginal portion of the fistula.

Fig. 2. The ends of the purse string suture are being brought into the vagina, where they are tied.

Fig. 3. The vaginal cuff closed by a purse string suture is shown with the purse string in the bladder musculature in place.

Fig. 4. The mucous membrane of the bladder is being dissected up.

Fig. 5. The mucous membrane of the bladder is closed to prevent tension with a mattress suture and No. 1 chromic catgut.

Following the closure of the bladder around the DePezzer catheter (fig. 3), the usual drainage is placed in the space of Retzius. The musculature is closed loosely and stay sutures of silkworm gut are employed. With the catheter in the urethra and the suprapubic catheter in place, the patient is then returned to her room and placed on a Bradford frame which is supported on wooden blocks placed at the head and foot of the bed. The frame is padded with pillows so that the patient lies on her face or is allowed to turn only slightly on either side for two weeks. Once a day both catheters are gently irrigated with 15 or 20 c.c. of boric solution to be sure that they are kept open and are draining well.

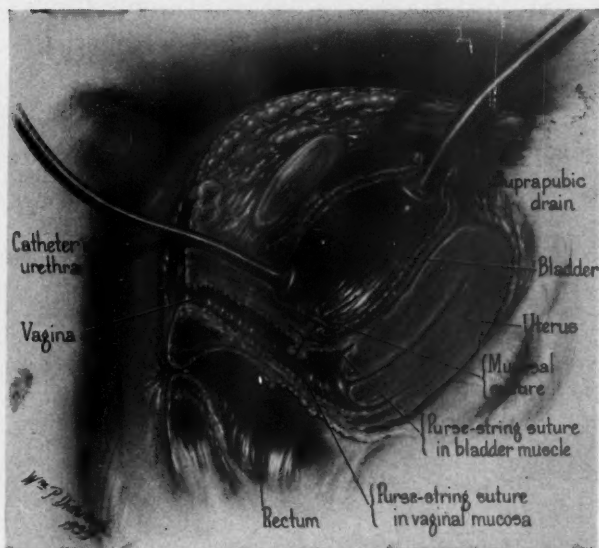


Plate 4. The large DePezzer catheter is shown coming out suprapubically, closed with purse string sutures. The three layers of closure of the fistula are shown and the No. 18 DePezzer catheter acting as a safety valve is coming out the urethra.

By using the Bradford frame one can be assured that the patient does not lie on either catheter and thus kink or collapse them since in lying in such a position there is always a free space over the suprapubic area. We have tried the old style of prosthetic mattress through which the drain was brought out in a hole in the mattress but had difficulty with kinking of the catheter and drainage tube. Also use of the Bradford frame makes the patient more easily handled for change of linen, etc.

In 1921 Chute first advocated having the patient lie on her abdomen after operation for vesicovaginal fistula. There are diverse opinions as to the value of this. Some men state that the position of the patient postoperatively is of no significance. I, however, am strongly of the belief that since water runs down hill it will seek the most dependent portion of the bladder in which is the large suprapubic DePezzer catheter. The urethral catheter is used simply as a safety valve.

Five cases of vesicovaginal fistula operated upon by the technic described above are presented. Of the five cases, one had had three previous operations by the vaginal approach, two had had two previ-

ous operations by the vaginal approach, one had had one. In the fifth case the suprapubic operation was the first attempt.

Four of these five fistulas developed after pelvic operations. One was the result of prolonged labor with forceps. One fistula was located high in the vault of the bladder. The other four were directly behind the trigone. In no case was the ureter involved in the fistula.



Plate 5. Patient is shown reclining on a Bradford frame on her abdomen. Brought out through a space in the middle of the Bradford frame is the suprapubic drainage and the urethral drainage. Sufficient space should exist between the frame and the mattress to prevent any possibilities of kink of the drainage tube.

The surgeon should first carefully examine the patient before contemplating the operation if the postoperative fistula occurs as a result of panhysterectomy. Otherwise, he may attempt an operation on a patient who has carcinomatous involvement in the pelvis. Also, if the patient has been given large doses of x-ray he should realize that he is dealing with devitalized tissue and the operation should probably be put off until such time as he may be sure there will be no recurrence of the cancer.

No trouble was experienced in the healing of the suprapubic wound. One patient had pyelitis during her postoperative convalescence; it responded to the usual urinary antiseptics.



Four of the five patients are completely cured. The fifth one unfortunately got out of bed on the third postoperative day and pulled out the drainage. She also refused to have it put back in place. The suture line of the closure held until the seventh day; the suprapubic wound then began to close and urine to leak through the vagina. This patient repented of her folly too late and so comes back to the clinic at intermittent intervals. She is able to void at times three to four ounces of urine and when last seen was requiring about three pads a day. She does not leak at night but leaks when she is in the upright position. In her case we have cystoscoped her and used a No. 5 ureteral catheter which has been worn and is quite rough. This passed through the fistulous opening, can be pulled backward and forward as a curet to the fistula, freshening its edges. As a result, the fistula has become somewhat smaller. We have also twice fulgurated the vesical margins of the fistula with high frequency current.

Many operators say that the mortality with suprapubic drainage is higher than with the simpler vaginal operation. I do not agree with this as suprapubic drainage of the bladder properly done is one of the simplest operations in surgery. I believe that additional suprapubic drainage offers a greater chance of cure of vesicovaginal fistula and I cannot see that it has any disadvantage.

#### REFERENCES

1. Young, H. H.: Repair of Vesicovaginal Fistula; Presentation of a New Instrument, *Surg., Gynec. & Obst.* 45: 226-229.
2. Chute, A. L.: A Suggestion for Postoperative Care of Vesico-vaginal Fistulae, *J. Urol.* 6: 77-81, 1921.
3. Ward, G. G.: In Dean Lewis' Practice of Surgery, vol. 10, chap. 4.
4. Duncan, Cameron: Treatment of Vesicovaginal Fistulae, *Am. J. Obst. & Gynec.* 35: 513-519 (Mar.) 1938.

## IMMEDIATE VERSUS DELAYED TREATMENT OF ACUTE APPENDICITIS WITH RUPTURE

### A Statistical Study

JOHN LUCIUS McGEHEE, M.D.

Professor of Surgery, College of Medicine, University of Tennessee  
Memphis

THE present day mortality rate of acute appendicitis is a national disgrace to the medical profession of this country. The statisticians tell us that more than 18,000 persons died of acute appendicitis in 1938—eighteen thousand unnecessary deaths! What a ghastly, humiliating reflection on the profession of this country. Dr. Hoffman, statistician, formerly with the Metropolitan Life Insurance Company, states that one case in five (20 per cent) of acute appendicitis is ruptured when referred to the surgeon. It is from this group of neglected cases that the present day (1938) death rate (10.4 per 100,000) arises, giving the United States of America the second highest death rate among the countries of the civilized world. Our death rate is exceeded only by that of the Dominion of Canada.

Would you believe that in a disease with as classical a clinical syndrome as acute appendicitis; that in a disease, the pathology of which is as accurately and definitely known as that of any disease entity; that in a disease in which the therapeutic indications are limited to only one rational therapeutic measure, the death rate would be what it is in appendicitis?

The cause of this death rate is due to the failure of the medical profession to apply what should be, after 50 years of experience, common knowledge.

I wish to emphasize the statement that *the responsibility for the present day death rate of acute appendicitis rests almost entirely upon the shoulders of the medical profession*, for very few patients with a pain in the abdomen wait many hours before seeking medical advice. This responsibility is shared both by the physician who sees them in the early hours of the attack, and by the surgeon who carries out the therapeutic indications.

I will not digress to discuss the motives of the medical man who fails to diagnose promptly and to advise immediate appendectomy before complications arise; nor to discuss the asininity of such advice

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From the Department of Surgery, University of Tennessee College of Medicine.

Read before the Postgraduate Surgical Assembly, the tenth annual meeting, of The Southeastern Surgical Congress, Atlanta, March 6, 7 and 8, 1939.

as, "My dear young lady, you have acute appendicitis, but you will get over this attack," or, "Madam, I think I can pull you through this attack without an operation," or, "Mother, we will apply an ice bag over the dear little fellow's abdomen and await developments." How frequently are these awaited developments tragic!

Physicians, however, are not solely responsible for this present day death rate. The average surgeon, who carries in his mind the childish picture of the appendix as an organ easily removed and who does not realize that the highest degree of surgical skill and judgment is required for the complications of the disease, is also a heavy contributor to this death rate.

Theoretically, we should have a death rate in acute appendicitis of less than 1 per cent and we would have it if diagnoses were promptly made and appendectomies promptly done by competent surgeons. Unfortunately, however, we are faced with a fact and not with a theory. Twenty per cent, or more, of our cases of acute appendicitis are complicated, due to negligence or ignorance or both, by the very serious complication of perforation and peritonitis. It is from this group that our present day death rate arises.

The two decades from 1911 to 1931 showed a rising death rate—from 13 per 100,000 in 1911 to 18.8 per 100,000 in 1931. During this period the dictum: "the time to operate upon a case of acute appendicitis is when the diagnosis is made," was in full force and almost universally approved.

The blind adherence to this old dictum brought us to the peak of appendiceal mortality in 1931. The enthusiasm to operate outstripped the enthusiasm to make a prompt diagnosis before the complication of perforation occurred.

Statistical surveys revealed the fact that it is impossible to make amends by hasty and precipitous operations for slothful diagnoses; so recourse was had by thoughtful surgeons to a means of combating the essential pathology of the perforated appendix. The patient's physiologic and metabolic status was taken into account and means, which may be summarized as the modernized Ochsner treatment, were devised, the object of which was to render the inoperable operable. It must be remembered that, as Royster quotes Ochsner as stating, "It is not a substitute for, but a preparation for operation."

In 1935 a survey was made of the previous five-year results (1930-1934) in acute appendicitis with perforation at the John Gaston Hospital, Memphis (table 1).

TABLE 1

ACUTE APPENDICITIS  
1930 to 1934 (5 Years)  
*With and Without Perforation*

Cases	Recovered	Died	Mortality Rate
1473	1351	122	8.2%
<i>Without Perforation</i>			
Cases	Recovered	Died	Mortality Rate
982	965	17	1.7%
<i>With Perforation</i>			
Cases	Recovered	Died	Mortality Rate
491	287	204	41.5%

NOTE: One case in three perforated on admission. No attempt was made to distinguish between the operable and inoperable. All cases subjected to immediate operation on admission. (Appendectomy and drainage.)

As a result of this survey the problem of improving this mortality rate of 41.5 per cent in cases of appendiceal peritonitis was undertaken by the surgical staff and the following orders were put in force for the guidance of the house staff:

#### ON ADMISSION:

1. A complete history including
  - Time since onset
  - Chronologic order of symptoms
  - Vomiting—type, frequency, character and duration
  - Purgatives or not—number of doses
2. A complete physical examination including
  - Temperature, pulse rate and blood pressure
  - Abdominal distention—degree: 0—1—2—3—4
  - Abdominal tenderness and rigidity—degree: 0—1—2—3—4
  - Mass—visible or palpable
  - Rectal and vaginal examinations
3. Clinical laboratory determinations:
  - Complete blood count, blood chlorides and non-protein nitrogen, chemical and microscopic examination of urine
4. A clinical impression:
  - Perforation or not
  - Operable or inoperable
5. Call attending surgeon to check opinion of operability
6. If considered inoperable:
  - a. Fowler position
  - b. Morphine sufficient for mild narcosis
  - c. Venoclysis—5 per cent dextrose in normal saline solution 3000 to 5000 cc. daily (amount of NaCl normal solution according to plasma chloride needs)

- d. Continuous intestinal deflation by suction siphonage
- e. Daily urinary secretion determination
- f. Daily blood chloride and non-protein nitrogen determination
- g. External heat over abdomen (heat tent)
- h. Blood transfusion—pro re nata—usually 5-7 days—amount 300-500 cc.
- i. Sedimentation time each 3 to 5 days
- j. Pulse, temperature and respiration every 4 hours
- k. Progress notes 3 times daily with special reference to general appearance, pulse rate, temperature, respiration, degree of distention, rigidity and pain, character and amount of fluid withdrawn by suction siphonage
- l. Criteria for operability:  
Ten days of normal temperature, normal pulse, normal leukocyte count, and absence of local physical signs

Under this general plan of management, varied to suit the exigencies of the individual case, we have treated 275 cases of acute appendicitis with perforation during the last three years and seven months with the results shown in table 2:

TABLE 2  
ACUTE APPENDICITIS  
July, 1935, to February, 1939

<i>With and Without Perforation</i>			
Cases	Recovered	Died	Mortality Rate
1139	1075	64	5.7%
<i>Without Perforation</i>			
Cases	Recovered	Died	Mortality Rate
837	832	5*	.5%
*Causes of Death:			
Acute Dilatation of Stomach.....		1	
Pulmonary Embolism .....		1	
Gas Gangrene of Abdominal Wall.....		1	
Peritonitis, Acute, Leakage at Site of Appendiceal Stump .....		1	
Acute Cardiac Failure—Obesity.....		1	
<i>With Perforation</i>			
Cases	Recovered	Died	Mortality Rate
302	243	59	19.5%

NOTE: One case in 3.7 cases perforated on admission.



More detailed analysis of the 302 cases in which perforation had occurred is shown in table 3.

TABLE 3

## ACUTE APPENDICITIS

July, 1935, to February, 1939

<i>With Perforation</i>			
Cases	Moribund on Admission Dead Within 48 Hours	Elapsed Time—Onset to Admission (Avg.)	
302	27*	5 Days	
*Causes of Death:			
	Peritonitis, Acute Diffuse.....	19	
	Pneumonia, Lobar .....	4	
	Uremia .....	3	
	Appendiceal Abscess, Gangrene of Intestine.....	1	
	All had had purgatives repeated from 1-5 times.		
<hr/>			
<i>With Perforation</i>			
(Rendered Operable by Modernized Ochsner Treatment and Subjected to Operation)			
Cases	Recovered	Died	Mortality Rate
275	243	32	11.6%
<hr/>			
<i>Appendix Removed</i>			
Cases	Recovered	Died	Mortality Rate
250	238	12*	4.8%
<hr/>			
<i>Incised and Drained</i>			
25	5	20**	80.0%
275	243	32	
<hr/>			
*Causes of Death:			
	Peritonitis, Acute, Diffuse .....	7	
	Pylephlebitis .....	1	
	Pulmonary Edema .....	1	
	Uremia .....	1	
	Pulmonary Embolism .....	2	
<hr/>			
**Causes of Death:			
	Appendiceal Abscess with Obstruction.....	12	
	Peritonitis, Acute, Diffuse.....	4	
	Septicemia (Positive Culture).....	3	
	Peritonitis, Acute, Diffuse (6th Month of Pregnancy)	1	

TABLE 4  
ACUTE APPENDICITIS: COMPARISON

1930-1934 (5 Years)	July, 1935 to February, 1939 (3 Years, 7 Months)
Acute Appendicitis With Perforation <i>Immediate Operation</i>	Acute Appendicitis With Perforation <i>Delayed Operation</i> (Modernized Ochsner Treatment)
Cases ..... 491	Cases ..... 302
Recovered ..... 287	Recovered ..... 243
Died ..... 204	Died ..... 59
Mortality Rate ..... 41.5%	Mortality Rate ..... 19.5%
	Operative Mortality Rate (Corrected by Elimination of 27 Cases Moribund on Admission)
	Cases ..... 275
	Recovered ..... 243
	Died ..... 32
	Mortality Rate ..... 11.6%

I think it fair to state that these statistics are compiled from the services of some 22 attending surgeons, assisted by a house staff, working in a general charity hospital whose clientele is from the lowest social strata, in whom the primitive instinct to swallow a purgative whenever suffering from abdominal pain is still uninfluenced by any form of educational propaganda, and who seek surgical relief only as a last resort.

It is also fair to state that during the pursuit of this problem there were varying degrees of enthusiasm and surgical acumen exhibited. I believe, however, that these statistics present indisputable evidence to support the contention that in that unfortunate group of neglected cases of acute appendicitis with perforation and peritonitis, the "delayed operation," preceded by preoperative preparation based on the physiologic needs of the patient, will result in a marked reduction in the present day death rate of appendicitis.

It must be borne in mind, however, that the application of these principles must not be undertaken lightly. Success depends upon eternal vigilance, meticulous attention to detail, and the exercise of the highest type of surgical judgment.

The rationale of delayed operation in cases of appendicitis with perforation and peritonitis is based upon the fact that there exists within the peritoneal cavity a natural protective mechanism which, if left undisturbed, will in the majority of cases bring about resolution or localization of the peritonitis. This protective mechanism

consists of the inflammatory response of the peritoneum to irritation and is characterized by the outpouring of an exudate rich in leukocytes and fibrin; it is strongly bactericidal. The fibrin elements bring about agglutination of serous surfaces, thus separating the contaminated from the uncontaminated portion of the peritoneum—the localizing effect. The leukocytic element of this exudate is equally as important because of its phagocytic action. It must be remembered that this protective mechanism is effective only *when left undisturbed*. Disturbing elements are food, purgatives, enemas and ill-timed operations.

If the surgeon could get these patients in the early hours after perforation, say in nine, ten or twelve hours—in what might be termed the stage of contamination—before peritonitis has developed, immediate operation would certainly be indicated. Unfortunately, we have no method of determining the exact hour of perforation. No definite time after onset can be used as a criterion of perforation. We have seen patients in whom the delayed operation was unquestionably justified in the first 24 hours of the attack and many others in whom immediate operation was indicated on the fifth, sixth and seventh days after onset.

This brings us to the crux of the whole matter: *the selection of the time to operate, perforation having occurred*. Upon this decision rests almost entirely the ultimate success of the individual surgeon. The mere fact of perforation cannot be taken as the criterion for delayed operation, but the effect of this perforation on the individual patient, the degree and extent of peritonitis present, the general physiologic status of the patient, determined by a careful analysis of the history, physical and laboratory findings must be the basis for this decision.

As dark as this picture is in this year of 1939 the statisticians bring us a ray of hope. They tell us that there has been a decline of 26 per cent in appendiceal mortality since the beginning of the current decade; that the death rate of 10.4 per 100,000 for 1938 marks a new low for this country. We believe this lessened toll of death from appendicitis in recent years may be attributed, in part, to the widespread educational campaign conducted through the cooperation of public health officials, medical associations, insurance companies, school officials and civic organizations. The medical profession has tardily but surely contributed to this recent reduction. The skill and judgment of surgeons have reached higher levels—especially in the treatment of appendiceal peritonitis. The types of anesthesia being used are resulting in a more favorable

experience, and preoperative and postoperative care have been improved.

Appendicitis in the United States, however, is still responsible for more than 18,000 deaths—18,000 unnecessary deaths.

Now that the paradox of the appendicitis mortality appears to be solved, the time is ripe for a nation-wide and vigorous campaign to reduce this disease to a negligible cause of death. The greatest step forward in such a reduction is prompt diagnosis, before perforation occurs, followed by immediate appendectomy in the hands of a competent surgeon.

For that unfortunate minority with perforation and peritonitis, a therapy in harmony with the patient's physiologic needs, a therapy to render the inoperable operable, which may be summarized as the modernized Ochsner treatment, offers the brightest ray of hope for the reduction of this unnecessary toll of death.

#### SUMMARY

1. The present day death rate of acute appendicitis is a national disgrace.
2. One case in five (20 per cent) is perforated when referred to the surgeon.
3. It is from the group of perforated cases (nationally, 20 per cent of all cases) that the death rate arises.
4. Hasty, precipitous, ill-timed operations cannot make amends for slothful diagnoses.
5. Delayed operation is predicated upon sound physiologic principles and its successful application depends upon the highest type of diagnostic acumen and surgical judgment.
6. It must be emphasized that "the delayed operation in acute appendicitis with perforation and peritonitis" is in no sense to be interpreted as an excuse for delay and procrastination in the treatment of acute appendicitis. "It is not a substitute for but a preparation for operation"—a means to render the inoperable operable.
7. The time is ripe for a nation-wide and vigorous campaign to reduce this disease to a negligible cause of death.

## THE MANAGEMENT OF SALPINGITIS

WILLARD R. COOKE, M.D.

Galveston

**E**VER since the advent of relatively safe abdominal surgery the subject of the management of salpingitis has been the battleground of controversial opinion. This has been due to a lack of appreciation of the peculiarities of the infecting organisms usually involved, of the pathologic reactions and defense-mechanisms in the internal genitalia and pelvic peritoneum, and of the regional anatomy and physiology. These peculiarities combine to render inapplicable the commonly accepted principles which govern the management of suppurative infection elsewhere in the abdominal cavity, especially as regards the most familiar instance, appendicitis. A discussion of these peculiarities in detail is beyond the possibilities of a brief paper; but the essentials may be mentioned.

When gonococcal infection of the tubal mucosa occurs, a defense-reaction is set up. This reaction, if not interfered with, brings about, first, a prompt and effective bacteriostasis which limits the spread of the infection and the local damage, and later, complete local recovery. In the case of unmixed gonococcal salpingitis, whether from the initial infection or from reinfection, very little damage is usually done, and this damage is ultimately repaired or compensated for practically without loss of function. The single prime essential to the prevention of interference with the defense-reaction is immediate and absolute confinement to bed. Local treatments, douches, etc., all interfere with the efficiency of the defense-reaction. If the patient is put to bed with the first suggestion of salpingitis, complete subsidence of the active phase of the inflammation almost always occurs within 72 hours. The period of bed-rest required for the disappearance of the tubal infection cannot be determined, but is probably about two weeks. At the end of this time the patient is well, as regards her salpingitis.

Unfortunately, however, the infection in the cervix does not react in this manner. The gonococci remain alive, in varying degrees of activity, for probably several months at least (in some cases, indefinitely); and from this source, with any reduction of the efficiency of the defense-mechanism, auto-reinfection of the tube occurs. In the patient who has recovered from the lower tract infection, there is usually reinfection of the cervix from sexual contact, with organisms of undiminished virulence. Whatever the source of the reinfection, recurrence of salpingitis in the absence of proper treat-

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ment is almost inevitable. Unfortunately again, many of the factors operating to weaken the defense-mechanism are, either absolutely or from a practical point of view, non-preventable. The more important of these may be mentioned: the bleeding phase of the menstrual cycle, sexual excitement, sexual intercourse, douches and other forms of local trauma, pelvic congestion (constipation is a frequent factor in this), fatigue, chilling, and intercurrent illness.

Invariably with repeated reinfections, often with the initial infection, the infection becomes mixed; that is, organisms other than the gonococcus also attack the tissues. In rather rare cases these secondary organisms are completely dominant over the gonococci, and the whole picture of the defense-reaction is altered; for instance, in the case of a virulent streptococcus, a rapidly fatal diffuse seropurulent peritonitis may occur. Fortunately, in the majority of cases the secondary organisms are of relatively low virulence, the reaction operates with equal efficiency, and the clinical picture remains the same except for the differences in the tissue pathology of the lesions created. In an intermediate group of cases the defense-mechanism is adequate to hold the activity of the secondary infection somewhat in check, but is inadequate to halt it. In these cases tissue damage (suppuration especially) progresses until appropriate treatment is instituted. Of course, an identical state of affairs occurs in those cases of mixed infection in which the defense-mechanism is weakened by improper management of the case. Insofar as our material indicates, an active inflammation (especially suppuration) which continues to be progressive in spite of absolute confinement to bed, apparently always indicates a dominance of the secondary infecting organisms.

From what has been said, it is apparent that the management of acute gonococcal salpingitis consists essentially of two measures:

1. Immediate and complete confinement to bed until the salpingitis has completely subsided.
2. The elimination of the infection from the lower genito-urinary tract of the woman, and from her sexual partner.

It is because of the virtual impossibility, from the practical point of view, of accomplishing the latter that permanent recovery from gonococcal infections in women has been so rare, except in the case of the cooperative and economically well-situated unmarried woman. It is impossible for the average woman to devote a year or more to the satisfactory maintenance of a favorable defensive balance; and, of course, if she is subject to repeated sexual trauma and reinfection a real recovery is almost impossible. Foreign protein ther-

apy, the Elliott treatment, diathermy, etc., etc., have been of some value; but they have all fallen far short of an actual solution of the problem. It is on account of the almost inevitable recurrences of salpingitis, each being marked by progressive tissue damage, that the numerous waves of the advocacy of initial radical operative treatment have arisen. It is certainly logical that, if a cure cannot be expected, the removal of the tube upon the initial attack will prevent recurrences and extensive damage to the ovary and peritoneum. This reasoning, however, does not take into account four very important things:

1. that recovery, even if only temporary, may permit the fulfilment of the woman's desire for a child;
2. that the woman and her husband, given the opportunity, may be willing to cooperate to the extent of a complete recovery;
3. that adnexoperitonitis of unmixed gonococcal origin is practically never fatal unless mismanaged; and
4. that salpingectomy during the active phase of the infection (whether initial or recurrent) carries a high postoperative mortality.

For over 20 years those who have a real knowledge of the peculiarities of gonococcal infection in women have been in complete agreement in regard to two points:

1. that salpingitis is a condition requiring operation only:
  - (a.) when incurability has been demonstrated by recurrent attacks in spite of efforts at conservative treatment;
  - (b.) in the chronic case (secondary infection);
  - (c.) for the relief of symptoms in the healed case (pain, adhesion symptoms, sterility, etc.);
  - (d.) in the persistently active case (progressive suppuration);
2. that operation in recurrent and chronic cases is never to be performed during the active phase of the infection.

Before progressing to a consideration of the principles governing operation in proper cases it may be appropriate to say that the discovery of the indirect specific action of sulfanilamide upon the gonococcus offers a hope that the first real solution of the problem may become available. When sulfanilamide is effective, it not only halts the progress of the infection, but eliminates the sources of reinfection in both the woman and her sexual partner. Unfortunately we have not yet arrived at a degree of knowledge which permits us so to adjust the dosage of sulfanilamide to cure all, or even a majority, of our cases. In any event, we can at present expect little effect on the majority of the mixed infections.

## OPERATIVE TREATMENT

Having arrived at the conclusion that operation in a case of adnexoperitonitis is indicated, we must remember that under certain conditions salpingectomy carries an absolutely prohibitive risk (13 per cent postoperative mortality), and that under certain other conditions the operative risk almost disappears, if the proper operation is selected and if proper technic is employed. How may we deter-

TABLE 1

*Operative Mortality in Cases of Salpingitis*

I. LAPAROTOMIES, FROM EARLY RECORDS, NO ATTENTION PAID TO FEVER AT TIME OF OPERATION.		MORTALITY		
CASES		Inflammatory Causes	Non-inflammatory Causes	Total
1404	Without fever on or after admission.....	0.50%	0.64%	1.14%
447	With fever at time of operation, 99-99.9.....	2.01	0.45	2.46
132	With fever at time of operation, 100-100.9.....	6.08	0.76	6.84
67	With fever at time of operation, over 101.....	11.94	1.49	13.43
177	Without fever at time of operation for 24 hrs...	1.13	1.13	2.26
127	Without fever at time of operation for 48 hrs...	3.15	0.00	3.15
366	Without fever at time of operation for 72 hrs...	0.00	0.82	0.82
II. CASES OPERATED ON AFTER 3 DAYS WITHOUT FEVER ABOVE 99.0.				
366	Previously reported .....	0.00	0.82	0.82
797	Present series .....	0.13	0.25	0.38
1163	Total .....	0.09	0.43	0.52
III. OPERATIONS FOR DRAINAGE OF PUS WITHOUT REMOVAL OF AFFECTED STRUCTURES.				
LAPAROTOMIES				
27	(From early records) unaffected peritoneum exposed to contamination .....	33.33	3.70	37.03
24	(Previously reported) unaffected peritoneum NOT exposed to contamination.....	0.00	4.16	
3	Present series .....	0.00	0.00	
27	Total properly managed .....	0.00	3.70	3.70
COLPOTOMIES				
228	Previously reported .....	0.00	0.88	
95	Present series .....	1.05	1.05	
323	Total .....	0.31	0.93	1.24

mine the conditions which insure a minimal postoperative risk? All of the laboratory procedures which ordinarily indicate the balance between bacterial virulence and the patient's resistance fail us when we try to apply them to this problem. Leukocytosis, simple and special differential leukocyte counts, opsonic index, and many other tests have proven to be of no value as a guide. The sedimentation

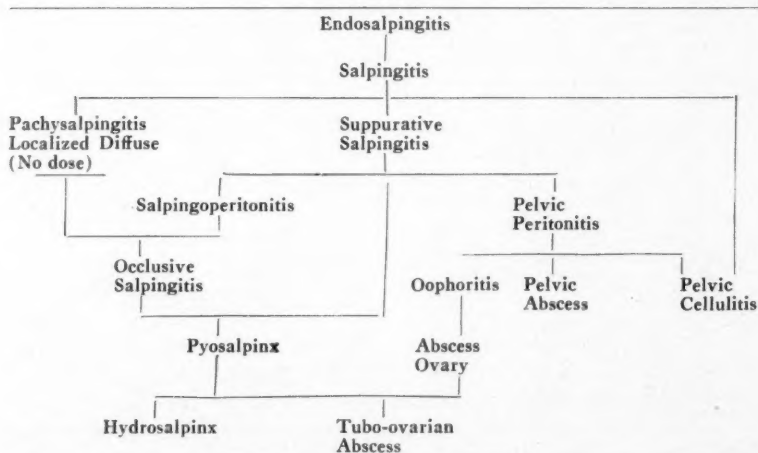
rate is apparently always rapid in the presence of active inflammation, yet it may remain rapid for weeks or months in cases in which operation is safe, especially if massive exudate, tissue damage, suppuration, or coincidental neoplasia exists. There is no generally accepted rule. In my own work, covering carefully studied cases, I have found this very simple rule to suffice: that in no case is the abdomen to be opened until there has been an absence of temperature above 99.0 degrees for 72 hours of absolute confinement to bed, with failure of the temperature to rise after a vigorous pelvic

TABLE 2

(1).—Active infection:	{ acute inflammation chronic inflammation }	Non-operative.
(2).—Quiescent infection:	{ chronic inflammation terminal effects of inflammation }	Salpingectomy.
(3).—Old infection:	(terminal effects of inflammation)	Salpingectomy or Functional restoration.
(4).—Persistently active infection:	{ active suppuration active cellulitis active necrosis }	Closed incision and Drainage only.

The actual tissue damage has equally to be considered.

TABLE 3



examination at the end of that period. The value of this rule is shown in table 1. If the temperature fails to subside at the end of 72 hours, daily examinations are to be made for collections of pus which may be drained by incision. In all of my cases of this group (which we designate as progressively active cases), either suppuration, streptococcal infection, or both have been discovered.

Our next problem lies in the selection of the exact operation appropriate to the case in hand; this can be based only on a knowledge of the various pathologic possibilities and the potentiality for recovery or disaster inherent in each. There are four clinical phases of the activity of the infection and its resultant inflammation (table 2):

Any stage of the pathologic progression may exist in any of the phases of the infection-inflammation. If the infection is overcome, any stage of pathologic damage may possibly regress to functional and gross pathologic normality. For instance, I have operated after a lapse of years on more than one case of pyosalpinx-pelvic abscess and found nothing except trivial adhesions; again, subsequent pregnancies have occurred in four such cases in my series.

The formulation of a table governing the exact procedure appropriate to each combination of phase and stage is possible and useful, but its presentation here is not possible except in a general way. In the active phase operation is of course never permissible. In the persistently active phase progressive cellulitis, productive inflammation or suppuration invariably exists; and the causative bacteria are probably always other than the original gonococcus. While there is a great variance of opinion as to the management of such cases, our experiences clearly indicate that such cases should be drained freely, but with care not to traverse the open peritoneal cavity. The great majority of these cases (83 per cent) can be drained by posterior colpotomy; a few (10 per cent) require anterior colpotomy. The rest (7 per cent) are inaccessible, per vaginam, and require an approach through an area of adhesion to the abdominal wall which prevents leakage of the infected fluids into the peritoneal cavity.

In the quiescent stage operation should not be undertaken except on the basis of symptoms which require salpingectomy; otherwise there is no reason for operating. It is the height of absurdity, and yet a common practice, to open the abdomen in such a case and then to close it without doing anything to help the situation. This error is based on the discovery of a minor pathologic stage in the tubes of a woman desirous of the preservation of fertility; but if the history of the inflammation justifies operation, the pathologic status of the tube, no matter how trivial, is the source of her trouble and the tube should therefore be removed. Of course, this principle is based on the premise of an accurate preliminary diagnosis.

In the chronic phase, operation is not indicated except for the relief of pain, sterility, uterine bleeding, or intestinal obstruction. Before an operation for tubal sterility is done, other causes of



sterility should be eliminated and the exact point of occlusion predetermined by salpingography; in fimbrial occlusions as high as 70 per cent of success may be obtained, while in cornual occlusions 3 per cent is highly gratifying (if done at all). In uterine bleeding, which justifies operation, hysterectomy should be done unless there is a very valid reason for conservation of the uterus because simple salpingectomy rather commonly fails to relieve the situation. It should be realized that, except in cases of hydrosalpinx, pyosalpinx, or pachysalpingitis, the pain is usually peritoneal, ovarian, uterine, or intestinal; therefore, salpingectomy will not relieve it.

In conclusion, may I repeat that the successful management of the problem of salpingitis hinges on accurate diagnosis and adequate judgment, both of these depending in turn on a thorough knowledge of the peculiarities of the infection involved, of the defense-mechanisms, and of the pathology of salpingitis and its sequelae. It is to be hoped that the day of reckless salpingectomy for any type of pelvic pain will soon be past.

## THE OPEN TREATMENT OF PERITONITIS SECONDARY TO APPENDICITIS

H. A. GAMBLE, M.D., F.A.C.S.

Greenville, Miss.

**V**ITAL statistics show that annually over 20,000 individuals succumb to appendicitis, and that the death rate for 100,000 population has been steadily rising in this country and Canada. Two interpretations can be placed upon these statistics: that there is an increased incidence of the disease or that the death rate itself is increasing.

It is generally recognized that the death rate from appendicitis in its early and uncomplicated states is practically negligible. In the series of 2,866 cases upon which this review is based there were 1,340 acute unruptured appendices and 980 chronic or interval cases in which there were only two deaths. Our problem is not with this type of case which should not be allowed to clutter up the question of mortality confronting us.

The problem which does confront us is that group of cases in which the infection has spread beyond the confines of the appendix, resulting in local peritonitis, general or spreading peritonitis, or abscess formation.

General peritonitis is a distinct clinical entity and its treatment should be approached from that viewpoint as practically it has only an etiologic relation to appendicitis. A review of the current literature reveals that, in all sections of the country, general peritonitis carries a mortality rate of from 25 to 30 per cent.

Haggard says in Nashville that the mortality rate is 24.7 per cent. Boland<sup>2</sup> in an analysis of the results in all of the hospitals in Atlanta found 33 per cent. Keyes<sup>7</sup> in an analysis of the cause of death from appendicitis in the St. Louis Children's Hospital and the Barnes Hospital states that the death rate from general peritonitis was 28 per cent. Reid<sup>10</sup> reports a death rate at the Cincinnati General Hospital of 33.9 per cent.

It is trite to say that prevention is better than cure. We all realize that an educational campaign stressing the dangers of purgation, the folly of procrastination, and the safety of early operation should be carried on continuously; but in the meanwhile the foregoing situation confronts us. As a result of this, the pendulum of treatment has swung back forty years.

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The literature of today is replete with the teachings of many of our foremost surgeons advocating the return to the Albert Ochsner plan of treatment as the answer to the problem. LeGrand Guerry's records representing a practice of a lifetime in which all cases of well developed peritonitis have been treated according to the Ochsner method with a death rate of 1.6 per cent is most enviable. Sperling and Myrick<sup>8</sup> of the University of Minnesota report 68 cases treated conservatively and their statistics, when analyzed, show a mortality rate in general peritonitis treated by this plan of 33 per cent. Gardner of Duke University, when giving the combined statistics of local peritonitis, abscess, and general peritonitis, treated by the Ochsner method, has a death rate of 9.7 per cent. However, his data shows that general peritonitis alone has a mortality rate of 40 per cent.

The Ochsner plan of treatment for general peritonitis is a snare and a delusion. In any statistical study these cases should be segregated; one would then have definite criteria upon which to base conclusions as to the effect of the Ochsner treatment upon the mortality rate of general peritonitis. The teachings of many of our foremost surgeons have already done untold harm in their effect upon the laity and the general practitioner and we will be reaping the ill results for years to come. Peritonitis secondary to appendicitis, like any other complication resulting from the spreading of an infection beyond the walls of the appendix, is a surgical problem.

There are certain fundamental principles of an etiologic character which have never been given the consideration they deserve. First and foremost is the character of the infection. In 1911 Heyd<sup>9</sup> from Frederick's Clinic reported that he found anaerobic organisms in 100 out of 102 cases studied. He isolated seventeen varieties and considered that they were present in greater profusion than aerobes in all stages of appendicitis and peritonitis and attributed to them the entire causation of gangrene and toxemia. Jennings<sup>10</sup> in 1931 said that he had been able to isolate anaerobic bacteria in 98 per cent of cases of acute appendicitis. Altemeir<sup>11</sup> last year presented a summary of the studies made along this line since 1887. It embraced the work of 31 groups of men over a period of fifty-two years in which there was practically a unanimity of findings as to the universal presence of anaerobes. In our experience we have found anaerobic organisms in over 75 per cent of these cases and believe that if a more perfect technic in culturing the anaerobic germs had been maintained the percentage would have been higher.

In the treatment of general peritonitis, the part played by these organisms has been accorded but little attention in the literature. Anaerobic organisms are dependent for their growth and develop-

ment upon certain definite conditions of heat, moisture, exclusion of air and the presence of dead or dying organic tissue. Another factor that is being largely ignored is that practically all complications and deaths are due to wound infections with this type of organism and not, as popularly stated, to peritonitis. Personally I have yet to see a patient die from nothing but peritonitis secondary to appendicitis following an operation. All of the patients here reported who died, succumbed as a result of wound infections with anaerobic organism.

During the years from 1920 to 1925 we noticed a definite increase in the number of serious wound infections in complicated cases of appendicitis with, in two cases, the development of spreading gangrene of the abdominal wall. A study of this subject convinced us that the key to the whole problem rested upon the fact that we were dealing with an anaerobic infection. We were convinced that if due consideration were given the nature of the infection and its life history, and if logical measures were employed to prevent its spread and further development in the wound—with due attention to the maintenance of the water level of the blood and the prevention of toxemia from intestinal paresis—the mortality rate could be lowered to such an extent as to compare favorably with the present death rate in uncomplicated cases.

Since 1924 we have practiced a definite plan of operative procedure which has apparently solved this problem for us. It is based upon sound surgical principles, namely, combat dehydration by the parenteral administration of fluids prior to, during, and following operation, and to give blood transfusions when indicated.

The plan of operative procedure is based upon the assumptions (1) that in 98 per cent of the cases of peritonitis anaerobic organisms are present; (2) that the appendix is the primary source from which the infection is maintained and that these organisms are dependent upon dead or dying tissue for their growth and the elaboration of their toxins; (3) that with the removal of the appendix this source of continued infection is eliminated and that the natural resistance of the peritoneum is then able to overcome the infection; (4) that infections of the abdominal wall play a far more important role in the causation of fatal sequelae than any other one factor; (5) that in the closure of the abdominal wound layer by layer, one is preparing a medium of traumatized tissue under conditions of heat, moisture and the exclusion of air most favorable to the growth of anaerobic germs; (6) that air is a specific against this type of infection; (7) that all wounds potentially infected by this type of organism should be left open; and lastly (8) that it is contrary to

all surgical principles to close a fresh wound which has just been freely bathed in pus.

To meet these indications we began the practice of removing all appendices when at all practicable and of breaking down all pockets of pus. This is followed by drainage of the peritoneal cavity, the suturing of the peritoneum down to the drain, the packing of the abdominal wound with gauze soaked in a germicidal solution for the first twenty-four hours. The pack is removed at the end of that time and the wound left open without dressings under a tent with a 40 candle power electric light, the patient for the first twenty-four hours being placed upon his abdomen so as to permit free drainage.

It was hard to break away from precedent and early teaching, so that in the period from 1925 to 1931 we had two series of cases almost equal in number which afforded an excellent opportunity for comparison of the open and closed methods of treatment. The first series consisted of 152 cases of a milder character in which it was deemed advisable to institute drainage. The abdominal wound was closed in layers down to the drain. There were three deaths. In the second group consisting of 59 cases, of a really more serious character than the above, and 82 cases of general or spreading peritonitis (141 cases in all) in which the wound was left open, there was one death, a case of general peritonitis.

From Nov. 1, 1931, to Nov. 1, 1935, there have been treated 14 patients suffering either from local abscess, local peritonitis or gangrene, with drainage and closure of the abdominal wound in layers to the drain, with one death. In a group of 106 similar cases with closure of the peritoneum down to the drain, leaving the abdominal wound open, there was one death; in a third group of 76 cases of general peritonitis there were two deaths. Personally since 1931 I have not closed the abdominal wall in any case in which drainage was considered necessary.

A wound contaminated from a ruptured or abscessed appendix is just as indubitably infected and can result in just as serious inflammation as would a similar wound bathed in fluid from general peritonitis and it is just as essential that the one be treated openly as the other. Fresh air is a positive specific for such infections. The surface of the wounds may take on a dirty, dark appearance, but this is superficial in character and does not spread as it would in a closed wound resulting in a formidable infection, spreading gangrene, or sloughing tissues with fever and toxemia. Notwithstanding the superficial infection there is no sloughing of tissues and but little if any indication of systemic toxemia.



Coincidentally we have had a marked diminution of pulmonary complications in patients so treated. This may be due partly to the routine postoperative employment of carbon dioxide and oxygen, but it is our opinion that most of these pulmonary complications are the result of absorption of bacteria from the wound and their metastatic lodgment in the lungs, and that the open wound treatment has proved a powerful factor in the prevention of these lung infections.

The work upon which this review is based has extended from Jan. 1, 1920, to Jan. 1, 1939, and statistically is shown in the table.

COMPARISON OF THE OPEN AND CLOSED WOUND TREATMENT OF DRAINAGE CASES FROM OCT. 1, 1920 TO JAN. 1, 1939

	<i>No. Cases</i>	<i>Deaths</i>	<i>Per cent</i>
Cases with abscess, local peritonitis, and gangrene drained and the abdominal wound closed to the drain.....	165	4	2.5—
Cases of abscess, local peritonitis, and gangrene with peritoneum closed down to drain and the abdominal wall left open.....	165	2	1.2+
Oct. 1, 1920 to Jan. 1, 1925			
Cases of general diffuse peritonitis with wound closed in layers to the drain.....	33	3	9
Jan. 1, 1925 to Jan. 1, 1939			
Acute general spreading or diffuse peritonitis, peritoneum closed down to the drain and abdominal wound left open.....	158	3	1.8—

To leave the wound open for drainage has long been recognized as good surgical practice but the fact has never been stressed as it should be nor has it been realized that in this procedure one is controlling and inhibiting the specific causative organism. Pool<sup>1</sup> says that he leaves the wound open in badly infected cases, putting only a few sutures in the peritoneum. Garlock<sup>4</sup> in reporting a series extending from 1928 to 1932 italicizes that in drainage cases no sutures were placed except a few in the peritoneum.

The principal features of the operative technic will bear repetition and are as follows: Preferably a McBurney incision is employed, free fluid is aspirated, the pelvis is explored and all adhesions broken down so as to evacuate all inflammatory fluids. Usually, the pelvis will be found full of pus and sacculated accumulations will also be found in the general peritoneal cavity. I wish to emphasize that we are not dealing with a walled-off appendiceal abscess but with general peritonitis in which one runs no risk of the further

dissemination of infection and in which it is obligatory that these accumulations of fluid be evacuated. The appendix is delivered and removed, simply ligating it and cauterizing the stump but not inverting it. Should the ileum be inflamed, thickened or waterlogged so as to interfere with peristalsis, an enterostomy is done, using a mushroom catheter. Penrose drains are then introduced into the pelvis and to Morrison's pouch, being brought out at the lower angle of the wound. In those cases with much fluid on the left side of the abdomen a third drain is placed beneath the spleen through a stab wound. The peritoneum is then closed down to the drain. Sufficient mattress sutures of silver wire or Babcock wire are then introduced through the abdominal wall down to the peritoneum and attached to buttons on the surface in order to prevent disruption. Silkworm-gut sutures are introduced to the peritoneum, the wound is washed with ether, and all open spaces are packed with gauze saturated with an antiseptic solution (1:1000 solution of merthiolate or 1:3000 solution of azochloramid) the pack being held in place with the silkworm-gut sutures tied in bow knots. The wire sutures are then tightened. Upon return to his room the patient is placed upon his abdomen, which position is maintained for twenty-four hours in order to obtain the maximum effects of drainage. At the end of the first twenty-four hours the wound is dressed, the pack removed and the wound left open without dressings under a tent with a 40 candle power electric light. The pack is placed in the wound for the first twenty-four hours for four reasons: (1) to maintain the stability of the abdominal wall and lessen danger of disruption; (2) for the bactericidal effect of the drug; (3) to promote the reversal of the flow of lymph; and (4) to stimulate the formation of an inflammatory barrier around the wound.

Preoperatively, measures are taken to overcome dehydration and toxemia by the administration of 5 per cent glucose solution in normal saline solution, or Ringer's solution, and a blood transfusion is given if indicated. While the patient is on the table 5 per cent glucose in normal saline is given continuously subcutaneously to compensate for the loss of body fluids and to maintain the water level of the blood. In all cases of peritonitis, following the operation glucose 5 per cent in saline, buffer salts or Ringer's solution is given intravenously at the rate of 150 to 200 c.c. per hour, depending upon the tolerance of the individual, for as many days as may be necessary. Since 1931 we have administered a therapeutic dose of anti-gangrene serum. There is usually a severe reaction. We cannot say whether the serum has been of any benefit or not, because in the six-year period prior to its use there was one death in 82 cases of general peritonitis and in the eight-year period since its employ-

ment there have been two deaths in 76 cases of general diffuse peritonitis. Therefore we have not sufficient criteria with which to reach a definite conclusion.

Also in all cases, gastric decompression and drainage is maintained with the Levin tube and the negative pressure Wangensteen apparatus. The latter, we feel, has been of invaluable assistance in the maintenance of decompression and the prevention of obstructive symptoms. When the Wangensteen apparatus is used for any length of time one has to be on one's guard against the development of an alkalosis. Routine examination of the carbon dioxide combining-power of the blood and the blood chlorides will forewarn us of the development of complications of this character.

This plan of treatment has been criticised from two standpoints: (1) it requires longer hospitalization and (2) theoretically there is increased probability of hernia. As regards the first, the criticism is not well founded, for in the same type of case the period of hospitalization is in reality shorter for open-wound treatment. Again, if the choice is left to the patient and he is told that by one method of treatment there are  $1\frac{1}{2}$  chances in 100 of dying and that by the other the chances of dying are 30 in 100, he quickly decides the issue. Hernias have been noticeable by the infrequency of their occurrence. Up to the present time we have been able to find only four patients in whom hernia has developed. The reason for this is twofold: (1) the McBurney incision is usually favored, and (2) there is no sloughing of tissue. The hernias which we have had to repair were, with one exception, following a right rectus incision.

Measures to maintain nutrition and promote elimination are all valuable and necessary aids. However, the marked lowering of the death rate from peritonitis due to appendicitis over a period of fifteen years to 1.8 per cent (158 cases with 3 deaths) as compared to a general death rate of from 25 to 30 per cent can be best attributed to the following factors:

1. Recognition of the type and cultural characteristics of the organisms always found associated with the disease,
2. Realization that the high death rate from peritonitis is due primarily to infection of the abdominal wall by anaerobic organisms, and
3. The adoption of an open wound treatment which inhibits or prevents the growth of anaerobes in the wound.

The key to the problem of the treatment of general peritonitis following appendicitis lies fundamentally in the recognition of the part played by anaerobic organisms and the institution or adoption of rational means to combat this type of infection.

Removal of the offending organ, drainage of the peritoneal cavity, and leaving the abdominal wound open to the air is a sane operative procedure based upon sound surgical principles which has placed surgical interference upon such a safe foundation and so lowered the death rate as to render this method, for us, the one of choice in treating this type of peritonitis.

## REFERENCES

1. Beer, E., cited by Pool, E. H.: Appendicitis with Gas Bacillus Infection, *Ann. Surg.* 81: 1177 (June) 1925.
2. Boland, F. K.: Results in the Treatment of Acute Appendicitis, *J.A.M.A.* 99: 443 (Aug. 6) 1932.
3. Coller, F. A., and Potter, E. B.: The Treatment of Peritonitis Associated with Appendicitis, *J.A.M.A.* 103: 1753 (Dec. 8) 1934.
4. Garlock, J. H.: Acute Appendicitis, *Am. J. Surg.* 13: 248 (Feb.) 1934.
5. Heyd, C. G.: Death from Appendicitis: A Preventable Mortality, *Am. J. Surg.* 26: 317 (Nov.) 1934.
6. Jennings, J. E.: The Relation of the Welch Bacillus to Appendicitis and its Complications, *Ann. Surg.* 92: 828 (Oct.) 1930.
7. Keyes, E. L.: Death from Appendicitis, *Ann. Surg.* 99: 47 (Jan.) 1934.
8. Sperling, L., and Myrick, J. C.: Acute Appendicitis; Review of 518 Cases in University of Minnesota Hospitals from 1932 to 1935, *Surgery* 1: 255 (Feb.) 1937.
9. Altmeir, W. A.: Bacterial Flora of Acute Perforated Appendicitis with Peritonitis; Bacteriologic Study Based upon 100 Cases, *Ann. Surg.* 107: 517 (April) 1938.
10. Reid, M. R.; Poer, D. H., and Merrell, P.: Statistical Study of 2,921 Cases of Appendicitis, *J.A.M.A.* 106: 665 (Feb. 29) 1936.

## ANAL CARCINOMA IN SITU:

Report of Three Cases

PAUL M. VICKERS, M.D.

Fellow in Proctology, The Mayo Foundation

RAYMOND J. JACKMAN, M.D.

Section on Proctology, The Mayo Clinic

and

JOHN R. McDONALD, M.D.

Section on Surgical Pathology, The Mayo Clinic

Rochester, Minnesota

**A**NY type of carcinoma may occur in situ. Broders has defined carcinoma in situ as: "... a condition in which malignant epithelial cells and their progeny are found in or near positions occupied by their ancestors before the ancestors underwent malignant transformation. At least they have not migrated beyond the juncture of the epithelial and connective tissue or the so-called basement membrane."

The lesions in the cases which we are reporting occurred in the perianal epidermis and this discourse is restricted to a consideration of the epidermoid type of carcinoma in situ. Broders has included in this category the intra-epidermal epithelioma of Borst and Jadassohn, Bowen's<sup>3</sup> precancerous dermatosis and Paget's disease of the mammary and extra-mammary epidermis. This type of carcinoma may be associated also with senile keratosis, arsenical keratosis, chemical dermatosis, actinodermatitis and xeroderma pigmentosum.

The histologic picture of carcinoma in situ is similar to that of carcinoma in general but in the former instances the "basement membrane" remains intact; the cells are polymorphous, frequently multinuclear and occasionally, there are true tumor giant cells. There is generally an increase in size and basophilic staining of the nuclei, and pathologic mitotic figures may be present. Individual cellular keratinization (Broders) and malignant dyskeratosis may be present.

Study of lesions of Bowen's<sup>3,4</sup> disease reveals cellular changes similar to those already described. Probably these lesions have no characteristic histologic picture that would allow them to be distinguished from epidermoid carcinoma in situ. Similar histologic changes are observed in some cases of senile and arsenical keratosis, chemical dermatosis, actinodermatitis and xeroderma pigmentosum. The intra-epidermal epithelioma of Borst develops in situ but has been considered a typical basal-cell epithelioma by Bloch and others.



Paget's disease of the nipple occurs in situ and is characterized by the Paget cell which is large, vacuolated, and separated from its fellows by clear spaces without intercellular bridges. The cell contains an eccentric nucleus.

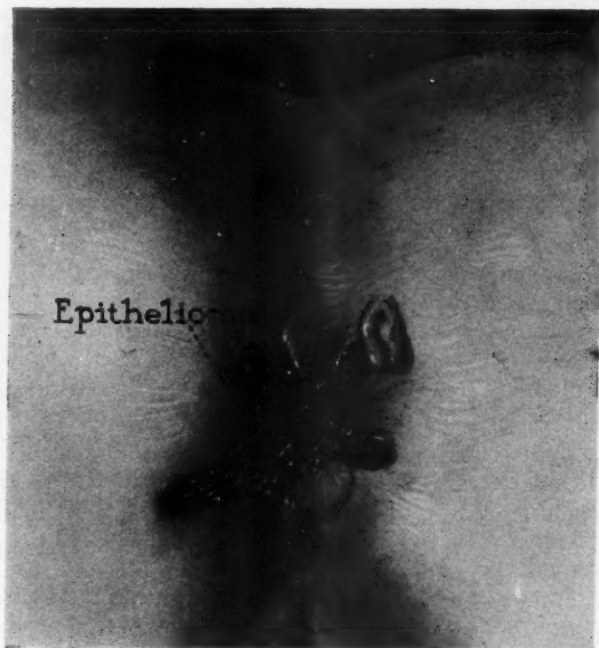


Fig. 1. Gross appearance of lesion (case 1).

From a surgeon's point of view, whether these conditions are cancerous or precancerous is an academic question. The treatment of choice is excision. Broders aptly summarized their status: "... it seems pertinent to state that the day has passed when epithelioma can be considered non-carcinomatous or at the most only precarcinomatous because it is within the confines of the so-called basement membrane. . . ."

#### REPORT OF CASES

CASE 1.—A woman, aged 68 years, registered at The Mayo Clinic May 3, 1939, complaining of itching and pain associated with bowel movements for eight years. On one occasion she had noticed blood on the toilet tissue. Seven years before the patient was seen at the clinic, a clinical diagnosis of a tumor of the rectum had been made elsewhere, and the condition was said to have been "cured" with three courses of radium therapy. Twenty-five years prior to registration at the clinic the patient had had a fistulectomy performed;

partial destruction of the anal sphincter resulted together with slight difficulty in controlling loose bowel movements.

On proctoscopic examination at the clinic there was found a reddened lesion of perianal dermatosis which surrounded the anus and varied from 1 to 4 cm. in width (fig. 1).



Fig. 2. Abrupt transition from benign to carcinomatous epidermis with intact basement membrane (case 1).

Microscopic study of a specimen showed the lesion to be squamous-cell carcinoma, grade 2 (Broders' index), for the most part in situ. There was an abrupt transition from the benign to the carcinomatous epithelium (fig. 2). Figure 3 represents pathologic mitotic figures, multinucleated epithelial cells (tumor giant cells) and malignant dyskeratosis. The lesion was excised locally by means of diathermy knife. Three months have elapsed without any local or systemic evidence of recurrence.

**CASE 2.**—A woman, 47 years of age, registered at the clinic June 2, 1937, complaining of pain in the right side of the rectum, associated with bowel movements for the previous three days. In the week previous to registration, on three occasions, she had seen blood on the toilet tissue.

Proctoscopic examination disclosed a retrorectal abscess with the primary opening in a crypt posteriorly at the dentate margin. Edema of the labia majora was present indicating extension of the abscess into this region. At operation, the abscess was uncapped and the superficial tissues of the perineum and labia majora were excised. Microscopic study of tissue showed squamous-cell epithelioma in situ, grade 3 (Broders' index).

Radium therapy to the right and left groins and vulva was carried out. Proctoscopic examination on April 22, 1938, showed small factitial ulcers

on the right and left perirectal walls, anteriorly. A specimen, examined microscopically, was found to be inflammatory. The patient was seen again on Aug. 9, 1938. Proctoscopic examination revealed a slight reaction of the rectal mucosa owing to radium therapy but evidence of malignancy could not be found.

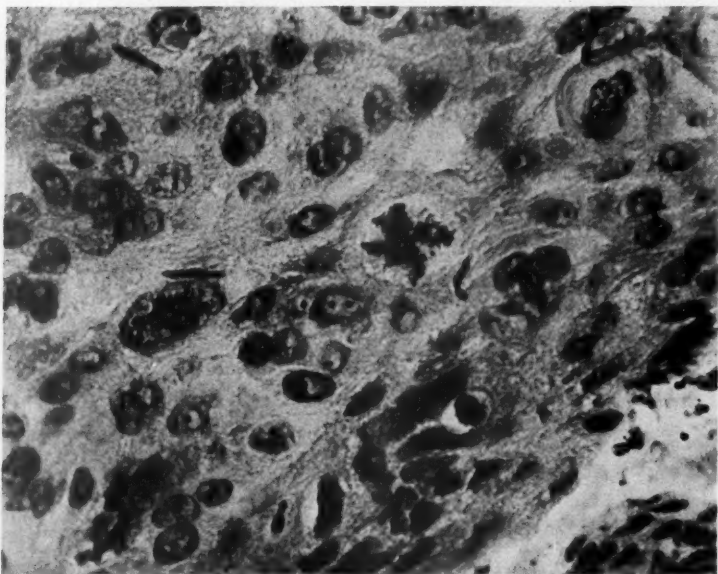


Fig. 3. Mitotic figures, tumor giant cells and pathologic dyskeratosis (case 1).

CASE 3.—A man, aged 28 years, registered at the clinic July 20, 1934, complaining of scalding and burning in the rectum associated with bowel movements, for the past year.

Shortly after the onset of his symptoms, the patient had been given two courses of roentgen therapy without relief. Following this a fistulectomy was done but the rectal symptoms had persisted. Proctoscopic examination at the clinic revealed red, perianal skin, an ulcer on the right posterior anal wall and internal hemorrhoids. The anal ulcer and hemorrhoids were excised. Microscopic study of the anal tissue showed squamous-cell carcinoma in situ, grade 3 (Broders' index).

Radium therapy was applied to the rectum and to the inguinal lymph nodes. Subsequent proctoscopic examinations in December, 1934, October, 1935, March, 1936, and October, 1937, revealed no evidence of recurrence of the lesion.

#### COMMENT

The diagnosis of carcinoma in situ is based on the histopathologic finding of malignant alteration of the cellular characteristics without migration of malignant cells beyond the basement membrane.

Whether these conditions are precancerous or cancerous, the treatment of choice is excision. Theoretically, at least, the prognosis is good after wide, local excision of the lesion. These three cases are illustrative of the importance of routine histopathologic examination of tissue, inasmuch as the gross appearance of the lesions was not suggestive of malignancy.

## REFERENCES

1. Bloch, Bruno: Cancers and Precancerous Affections from the Dermatological Viewpoint, *Cancer Review* 7: 65-98 (Feb.) 1932.
2. Borst-Würzburg: Ueber die Möglichkeit einer ausgedehnten intraepidermalen Verbreitung des Hautkrebses, *Verhandl. d. deutsch path. Gesellsch.* 7: 118-123, 1904.
3. Bowen, J. T.: Precancerous Dermatoses: A Study of Two Cases of Chronic Atypical Epithelial Proliferation, *J. Cutan. Dis.* 30: 241-255 (May) 1912.
4. Bowen, J. T.: Precancerous Dermatoses: A Sixth Case of a Type Recently Described, *J. Cutan. Dis.* 33: 787-802 (Dec.) 1915.
5. Broders, A. C.: Carcinoma in Situ Contrasted with Benign Penetrating Epithelium, *J.A.M.A.* 99: 1670-1674 (Nov. 12) 1932.
6. Jadassohn, J.: Demonstration von selteneren Hautepitheliomen, *Beitr. z. klin. Chir.* 136: 345-358, 1926.
7. Paget, James: On Disease of the Mammary Areola Preceding Cancer of the Mammary Gland, *St. Barth. Hosp. Rep.* 10: 87-89, 1874.

## LIFEGUARDS OF SURGERY

AMBROSE L. LOCKWOOD

D.S.O., M.C., M.D., C.M., F.A.C.S., F.R.C.S. (c)

Lockwood Clinic

Toronto, Ontario

**I**T IS with lifeguards of surgery as with "lifeguard tires" on a motor car; while they insure a certain measure of security from accident, injury and even untimely death, they are not infallible, and do not warrant undue speed or greater recklessness and daring than long experience, sound judgment and the risks of the route permit.

Lifeguards in surgery depend on many factors inherent in the patient, the surgeon, his assistants, and the facilities afforded for accurate diagnosis, on thorough preparation and rehabilitation of the patient prior to operation, painstaking and methodical surgical technic applied to procedure sanely established by long experience, and on careful postoperative care and observation. Fate, luck, and that fickle maiden, Chance, have no place in modern surgery.

It will be possible in this presentation to touch but lightly on the factors that make for safety in surgery today.

Accuracy in diagnosis and in estimation of the operative risk and possible operative and postoperative complications is imperative if our mortality is to be reduced and grave postoperative sequelae avoided.

Every possible means should be adopted to determine positively the cause of the patient's symptoms: a searching and systematic history, a complete and thorough physical examination from head to foot, accurate laboratory determinations, experienced roentgenologic investigation, frank and free consultations with confreres as to their opinion of the case, and finally a judicial and deliberate summary of all the evidence to determine the cause of the complaints, whether or not it is amenable to surgery, when operation can most safely be undertaken, the preoperative treatment required, the risks of the operation, and the results to be expected. Not only the surgeon but his surgical assistants and operating-room staff, in all graver operations, should be thoroughly schooled in the procedure to be adopted, the condition of the particular patient, and the hazards and pitfalls that may present themselves during the course of the operation and the few days immediately following.

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The experienced surgeon and his assistants will endeavor to determine what operative and postoperative difficulties may arise. Keeping the safety of the patient constantly in mind, they will carry out every possible measure for rehabilitation of the patient prior to operation. They will be prepared for anything untoward that may occur during the procedure, and will promptly institute, supervise and carry out every postoperative precaution, no matter how grave or trifling, that will contribute to a safe and uncomplicated convalescence. We have made it a rule, insofar as it is possible, to carry out prior to operation every measure that might be necessary following operation. For example, if a patient may need a transfusion during the operation or immediately after, we give the patient the benefit of the doubt, and transfuse before operation as well as after.

Insofar as is possible, every member of the surgical team should have a definite understanding and knowledge of the operation to be undertaken, and the alternative procedure should the first not be feasible.

At all times and under all circumstances the patient should be given the benefit of the doubt.

If such precautions are taken so-called surgical shock will not be encountered except in grave catastrophes such as in perforation of a peptic ulcer, rupture of an intra-abdominal organ, injury due to accidents, wounding, etc.

Surgical shock after operative procedures for chronic conditions should more aptly be spoken of as surgeon's shock. It is due to lack of proper preoperative and operative precautions, and to too rough and too much surgery, more often than to the lesion itself.

No surgeon is justified in taking on such a volume of surgery that he cannot give to his patients the personal attention that the gravity of the cases requires. As the demand for his services increases he must himself see to it that his assistants have been carefully selected and that their experience, training, surgical judgment and technical skill is such that he would not hesitate to put himself or a member of his family under their care.

Multiple stage operations represent real surgical lifeguards. In certain operations on the brain, thyroid gland, chest, stomach, gall-duets, colon and urinary bladder, multiple stage operations demand courage, judgment and eternal vigilance, but they pay high dividends in avoiding complications, grave reactions, shock and actual mortality. The individual experience and skill of the surgeon and his surgical team and the facilities afforded by the hospital are equally as important in determining the wisdom and necessity of

multiple stage operations, as the condition of the patient to withstand operation, and the gravity of the lesion itself.

The conscientious, astute surgeon must frequently take stock of himself, his work, judgment, technic and results, and determine for himself his ability and limitations in carrying out certain operations. He must not be too easily swayed by fads and fantasies and the glowing records and accounts of newer operative procedures. Statistics and figures are not sufficient to warrant abandonment of operations he knows by long personal experience to have given good results with a minimal mortality. He should read, travel, visit master surgeons, see them at work, and talk with them and their associates before too lightly adopting operative measures that today may seem advisable, but tomorrow may be abandoned.

American surgery has developed slowly, methodically, ever progressively in the hands of masters of surgical judgment and skill—men not easily swayed by every surgical weather vane. The methods and experiences of these men should not be hastily abandoned until long experience in many hands has firmly established the value, safety and advantages of newer methods and more heroic undertakings.

#### ANESTHESIA

Little need be said on the question of anesthesia except to point out the advantages, saneness and safety of a selected spinal anesthesia, and in a limited type of cases an inhalation anesthesia, occasionally of the intratracheal type. Nearly all of us here assembled have passed through the era when spinal anesthesia was not safe, but with the advent of ephedrine to control blood pressure, and the newer preparations for intraspinal use, the role of spinal anesthesia in general surgery has become firmly established. The use of spinal anesthesia with resultant relaxation of the abdomen and avoidance of irritant effects of inhalation anesthesia on the lungs, has greatly simplified surgical technic and postoperative sequelae. Since 1924 we have used novocain intraspinally for short operative procedures and pontocain for operations requiring more time and have rarely employed an inhalation anesthesia except intratracheally in certain intrathoracic operations. Many thousands of operative procedures have been carried out in that time, and a pleasingly low mortality and almost complete absence of postoperative complications have firmly established spinal anesthesia as the one of greatest safety in our abdominal work. A high percentage of all our surgery of the head, face, neck (including all thyroidectomies), chest and extremities, and some in the abdomen have been carried out for more than 25 years under a local block anesthesia.

The use of spinal anesthesia (preferably in our experience, novocain or pontocain) and of local anesthesia (novocain) and of intratracheal anesthesia when positive intrapulmonary pressure may be necessary, constitute surgical lifeguards that no surgeon can neglect to adopt.

#### BRAIN

I shall say little in regard to brain surgery except to point out the great accuracy with which brain lesions can now be recognized, located and dealt with surgically. However, all of us must constantly keep in mind the necessity of searching for and recognizing early the presence of a subdural hematoma in all patients who give a history of head injury, regardless of how slight. It should not have been left to this late day to recognize this grave condition. All neurologists are now thoroughly aroused as to the incidence of this condition, but there is constant evidence that it is still being overlooked by the profession generally.

#### GOITER

Insofar as thyroidectomies are concerned, the value of hemithyroidectomy as a life-saving measure cannot be overestimated. It applies not only to patients in extreme hyperthyroid states, but to a definite percentage of patients with large adenomatous goiters, particularly when there is a deep substernal projection or retropharyngeal extension where infection might be serious and drainage not easily maintained. It is particularly in this latter group that the necessity and wisdom of hemithyroidectomy is too often overlooked and death occurs, even though prior to operation there was little or no actual thyrotoxicosis. Multiple stage operations are still indicated in goiter surgery and contribute to further reduction of mortality, even the small mortality which attends present day goiter surgery.

#### CHEST

The high incidence of primary carcinoma of the lung, equal to that of carcinoma of the rectum, must be borne in mind. How could we have possibly overlooked this problem all these years till the last decade? Ambroise Paré (1509-1590) toward the close of his surgical career pointed out that the limits of surgery had been reached for all time. Moynihan in 1920, stated that the scope of surgery, particularly that of the chest, could not be extended further. The art and science of surgery has progressed until now an entire lung can be safely removed, with a relatively low mortality and a high percentage of cures, if undertaken early. It behooves every member of the profession to acquaint himself with the high incidence of primary carcinoma of the lung, the early symptoms, the diagnostic measures to be adopted and the benefits of early surgical inter-

ference. The operation itself is not one for general surgeons to undertake, but in almost every community in America today there are specially trained men capable of dealing safely with this "last great West" of surgery. What a proud triumph of diagnostic skill and surgical technic is total pneumectomy!

#### HEART

Time will not permit me to speak at length on Beck's operation to supply blood to the heart muscle for the relief and cure of coronary thrombosis. I have had considerable personal experience with this operation, and I am firmly convinced that no procedure in all the proud galaxy of surgical triumphs has been more thoroughly and soundly developed by experiment and bitter experience than this operation. Ten years from now this operation, or at least the principle of it, will be recognized throughout the surgical world as life saving, and will be in daily practice in all large surgical centers.

#### DIAPHRAGMATIC HERNIA

The high incidence of diaphragmatic hernia must be recognized. The outstanding experience of Harrington and his technic and success in dealing with the condition surgically should be studied by all general surgeons. In all routine explorations of the abdomen the wise surgeon will sweep his hand over the diaphragm, particularly the esophageal hiatus. Recently we have dealt with a diaphragmatic hernia of 12 to 16 years' duration in a woman who had had three major surgical operations in the past five years in the hands of a skilled surgeon, without the presence of a large hernia through the esophageal hiatus having been detected. Had he taken the precaution at the first operation to pass his hand into the esophageal hiatus he would have saved the patient years of distress and three subsequent operations, with all the suffering, worry and needless expense entailed. She was immediately relieved of her symptoms, after the stomach was released from the hernia, the sac excised and the hernial opening sutured.

#### DUODENAL ULCER

May I again stress the necessity of not too hastily adopting subtotal gastrectomy as the operation of choice for this condition. If you have been able to get 85 to 90 per cent of cures with gastroenterostomy and plastic operations at the pylorus without recurring marginal ulcer of more than 2.5 to 3 per cent, and a reasonably low mortality, do not be too easily beguiled into abandoning your methods for measures that may prove to be a chimera, though reported to have given results for others. Recurring marginal ulcer in the stoma of a high gastrectomy is not easy to deal with sur-

gically. Just as we can safely temporize and be conservative in deciding on the necessity of surgery for duodenal ulcer, so likewise may we safely temporize and maintain a conservative attitude in dealing with the condition at operation, except in 10 to 12 per cent of patients with recurring hemorrhage and wide spread periduodenitis and perigastritis. Many surgeons who in the past two or three years had adopted sub-total gastrectomy as the operation of choice for duodenal ulcer have in the last year switched back to more conservative procedures.

#### THE GALLBLADDER AND DUCTS

Cholecystectomy should not be delayed until the patient develops an acute attack. The diagnosis and recognition of cholecystitis and cholelithiasis is not difficult. The old theory that surgery should be deferred if the patient has not had a major attack with pain is not tenable. Cholecystectomy is the operation of choice, and drainage of the gallbladder bed is unnecessary unless there has been undue soiling. Personally, I have not employed drainage after cholecystectomy for the past 25 years. There remains a small percentage of patients so acutely ill or such bad surgical risks that drainage of the gallbladder itself under local anesthesia, through a small incision, is the limit of safety and is a life-saving measure.

There has been an unwarranted tendency to open and explore the common and hepatic ducts. Careful and thorough palpation of the hepatic and common duct, and observation and visualization by transillumination with the Cameron light or the Curv-lite passed into the foramen of Winslow behind the ducts will usually determine the presence of stones and indicate undue enlargement and distention of the duct. By this means one can materially reduce the percentage of patients who in the past would have had a choledochotomy performed. In addition, in a definite percentage of patients who have not been recently jaundiced or have no evidence of obstruction at the outlet, a dilated common duct can be safely closed by suture and prolonged drainage and convalescence avoided. In such cases it is safer to leave a cigarette drain in for 72 hours. Grave complications and increased mortality have resulted from unnecessary exploration of the common duct. However, the high incidence of stones in the ducts in the presence of stones in the gallbladder must be kept in mind.

#### ACUTE APPENDICITIS

There is a small but clear cut percentage of patients with acute appendicitis and localized or spreading peritonitis in whom removal of the appendix should not be undertaken. Even after the abdomen has been opened there is a small percentage of patients with an acute



appendix that may or may not be ruptured, but that is so bound by adhesions or encased in omentum and loops of bowel, that removal may be fatal, whereas if the appendix is not disturbed and the abdomen closed, the inflammation will subside and six months later, the surgeon can re-open the abdomen and safely remove the appendix. It is astounding to observe that all evidence of the previous attack has completely vanished and the appendix may be quite free even of adhesions. It is not always easy to persuade the family or the family doctor that such conservatism is wise, but long experience has proven that such treatment is life-saving.

#### COLON

The great importance of decompressing the colon by cecostomy or appendicostomy, as urged by Rankin and others, prior to any direct attack on the bowel for relief of obstruction due to carcinoma or diverticulitis cannot be too strongly urged. It permits of drainage of foul gas and fluid from the distended proximal loop of bowel. The edema adjacent to the site of the obstruction subsides. The bowel can be irrigated, nourishment in any quantity can be given through a catheter passed into the bowel, dehydration rapidly overcome and indeed frequently as the edema subsides, the obstruction opens up itself. In addition it acts as an ideal vent or valve for the escape of gas and fluid after resection of the growth, thus avoiding distention of the proximal loop that in earlier years caused leakage at the site of the resection with death or a fecal fistula. The cecostomy if small and properly placed usually closes itself without further surgical interference or at the most a very minor procedure. Multiple stage operations and cecostomy or appendicostomy constitute real lifeguards in surgery of the colon that no sane surgeon can ignore.

The administration of oxygen, employing an oxygen tent or the practical, convenient and expense-saving mask developed by Boothby and Lovelace constitutes a real lifeguard during and after certain surgical procedures, as does the indwelling duodenal tube, glucose and calcium intravenously, and blood transfusion as previously mentioned.

This brief summary of precautions and measures that serve to prevent unnecessary surgery, offset shock, avoid accidents and complications, and reduce mortality is presented as lifeguards in surgery that none of us can afford to ignore or overlook.

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ATLANTA

L. MINOR BLACKFORD, M.D.  
*Editor*

B. T. BEASLEY, M.D.  
*Managing Editor*

ROY B. MCKNIGHT, M.D.  
*Associate Editor*

FRED W. RANKIN, M. D.  
ALTON OCHSNER, M. D.

FRANK K. BOLAND, M. D.  
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I. A. BIGGER, M. D.  
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## WHY THE SOUTHEASTERN?

The body of man has ever been a battleground in which disease is striving to overcome life. Pain is a definite sign of conflict between these forces. Pain may not be present although the battle is raging. The greatest gift ever made to man was the power to relieve pain and fight disease. To the medical man this commission has been given—and what a commission it is!

It has been said that surgery is an art. Surgery is not only an art, it is a science as well. Haggard says, "Surgery is the queen of the arts." The surgeon is the greatest actor on the stage of life and as an artist he has no equal. Nothing is more dramatic than a well directed act in the operating room. The surgeon must be both artist and scientist because all true art must have a scientific background.

The artist with his brush or the sculptor with his chisel immortalizes himself in the execution of a picture or statue that symbolizes life while the surgeon-artist with his scalpel immortalizes himself in the execution of a scientific marvel that makes life itself more abundant. The art of healing is truly a gift of God and he who defiles that gift is not worthy of the name surgeon.

Before the War between the States the South could proudly boast that its sons and daughters were able to secure good educations

abroad and from the best colleges of this country. Doctor Davison, in his retiring address at the Tenth Annual Assembly of The Southeastern Surgical Congress, called the roll of the surgeons of the South who distinguished themselves in their contributions to surgery. After the War, the Southerners were unable to educate their sons at the best colleges and many low grade medical colleges and diploma mills sprang up over the South and turned out large numbers of men with the title of M. D. Consequently, progress in the South was in reverse for several years. Few men there were whose training in surgery was sufficient to qualify them as surgeons. Most surgical cases were sent to the north for operation. Many received no surgery at all because they were unable to be sent. During the past quarter century medical progress got back in low, then in second, and finally in high and is today going forward. Our southern schools are now well equipped and are turning out medical men and surgeons surpassed in no other section of this country or abroad.

Fifty years ago there were no surgical organizations in the country because there were but few surgeons. Later, as the number increased, the organization instinct began to develop and surgeons began to organize groups. The first one of these was the American Surgical Association composed principally of teachers and limited to one hundred fifty members. Soon it was evident that the limitations were too restricted and the Southern Surgical Association was founded with a limitation of two hundred members, many of whom were members of the American Surgical Association.

In 1913 the American College of Surgeons was founded. By this time there were so many surgeons unorganized, and a lack of coordination was so evident, that a "group of prominent surgeons were so stirred by the need for a means of coordinating and increasing their professional knowledge, and elevating the ethics of their profession, that they decided to form an association for that purpose." Membership in the American College of Surgeons was not limited as to number but by high requirements for admission to Fellowship. At present, the number of men belonging to this organization is 12,000.

The American Surgical Association, The Southern Surgical Association and The American College of Surgeons are national in scope. In the opinion of some surgeons these three organizations filled the requirements for the surgical profession in this country. There were others, however, who felt that the close, intimate, relationship of the profession in certain sections was not sufficiently coherent, and as a result, sectional organizations were formed; such as, the Pacific Coast Surgical, the Western Surgical, the New England Surgical and the Southeastern Surgical Congress. These re-

gional organizations seem to be serving the surgeons in their respective territories probably more satisfactorily than did those of national scope.

The Southeastern Surgical Congress was organized in 1930 in response to the philosophic urge that more good could be accomplished by closer contact among the surgeons in the Southeast. At first there were only seven states composing the Congress. At present there are eleven with a membership of 571. The purpose of the Congress was stated in the Preamble to the Constitution:

This Association is organized for the purpose of stimulating progress in medical science in the Southeastern United States and neighboring territories, of cooperating with accredited medical schools and hospitals for higher standards of medical education, of promoting the science of surgery and kindred arts and sciences and the welfare of the profession of surgery; to hold professional and social meetings and to publish transactions.

Since its organization assemblies have been held yearly in this territory and the proceedings have been published in THE SOUTHERN SURGEON. One feature of the Congress which has proved to be the most valuable part of its activity is the State Clinical Conferences. These conferences are held in small towns and rural hospitals for the purpose of taking the clinic to the doctors. Georgia, Florida, Alabama, and South Carolina have been holding these conferences for several years. This year two were held in Georgia.

The Southeastern Surgical Congress is making an effort to furnish its members opportunity through the pages of THE SOUTHERN SURGEON and places on our programs. During the ten years the Congress has been holding its Assemblies our Southern men have proved that they are not lacking in ability to write, in power to speak, and in courage to do.

Places on our annual assembly programs are accepted by the leaders in the surgical world. Few other surgical programs in the country can equal ours. Our State Clinical Conferences have demonstrated the need of this type postgraduate teaching service. THE SOUTHERN SURGEON goes to the four corners of the earth and has been abstracted by the leading medical journals.

The Congress, through THE SOUTHERN SURGEON, the annual assemblies, and the clinical conferences in the states, has attempted an extensive program in an effort to promote medical science and to aid the surgeons in the Southeast particularly. Only by combined cooperation of the surgeons of the country has it been possible to advance. The Southeastern Surgical Congress is primarily interested in the welfare of humanity and to the surgeons whose mission in life it is to serve humanity, the Congress is respectfully rededicated.

B. T. BEASLEY, M.D.

## BOOK REVIEWS

*The Editors of THE SOUTHERN SURGEON will at all times welcome new books in the field of surgery and will acknowledge their receipt in these pages. The Editors do not, however, agree to review all books that have been submitted without solicitation.*

**DISEASES OF THE FOOT.** By EMIL D. W. HAUSER, M.S., M.D., Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School; Attending Orthopedic Surgeon, Passavant Memorial Hospital, Chicago. With a Foreword by SUMNER L. KOCH, M.D. 472 pages, with 263 illustrations on 172 figures, some in colors. Price, \$6. Philadelphia and London: W. B. Saunders Company, 1939.

We know a fellow who is really interested in feet. The extraordinary thing is that we know only one such (in addition to our friend Dr. Hauser). It is true that almost any surgeon will treat a Pott's fracture, that orthopedists enjoy correcting club feet and transplanting tendons to relieve the residua of poliomyelitis, that dermatologists thrive on treating foot itch, that Rex Beach's friend has grown rich twisting feet for whatever ails you. For the most part, however, the medical profession has neglected the feet and the poor long-suffering public whose dogs hurt has sought relief from the chiropodist or the department store "foot specialist." The modern chiropodist who has spent three years studying his specialty in a university (there are several such schools) and who considers his work a profession, can teach the average doctor a great deal about feet; several fine clinics have added such a man to their staff—only to find that the staff kept him so busy that he had no time for other patients. Granting that a man so trained may be a real expert in the minor surgery of the feet, we believe that these ills still belong to the medical profession; and moreover that the public has difficulty in distinguishing between a well trained chiropodist and one whose only title is self-bestowed.

In short, Dr. Hauser's book, the first comprehensive book in English, one of the first in any language, could only have been written by a physician, trained as an orthopedist, with a good knowledge of general medicine and neurology, who has made a special study of the feet and who is familiar with simple conservative measures but is capable of the most radical ones. Those who believe that it is the duty of doctors (and of no one else) to relieve human suffering, and that it is important to relieve unromantic pains and disabilities, as well as to save lives, will do well to study and to own this book.

**A TEXTBOOK OF SURGERY.** By *American Authors*. Edited by FREDERICK CHRISTOPHER, B.S., M.D., F.A.C.S., Associate Professor of Surgery at Northwestern University Medical School; Chief Surgeon, Evanston (Illinois) Hospital. Second Edition, Revised. 1695 pages, with 1381 illustrations on 752 figures. Price, \$10. Philadelphia and London: W. B. Saunders Company, 1939.

To teach geometry or Greek would not appeal to most of us for these subjects have not been advanced appreciably since the days of Euclid. To teach surgery, however, appeals to nearly all of us for this great subject changes from day to day. And every surgeon who is worth his salt does some teaching. Those who not only engage in research but who consciously devote much of their time to teaching not unnaturally acquire skill in imparting such knowledge, and such men have written most of this book.

This textbook is not designed for the undergraduate, though he might profitably use it for reference. It is not so full as a multivolumed "system," but



this very fact increases its usefulness to the busy practitioner, and if he wants further information he can consult the references. These references are particularly well selected: they include historical landmarks as well as recent important contributions: for example, Gross' successful ligation of the ductus arteriosus reported last spring is included. Twelve authors discuss sulfanilamide. Ruptured nucleus pulposus is discussed intelligently; it is not suggested that it is the only cause of pain in the back or leg.

In short, the book is recommended without reservation to the busy surgeon, and when it becomes necessary to replace it with a new edition his pocketbook won't suffer severely.

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THE ART OF ANAESTHESIA. By PALUEL J. FLAGG, M.D., Visiting Anaesthetist to Manhattan Eye and Ear Hospital; Consulting Anaesthetist to St. Vincent's Hospital, New York; Consulting Anaesthetist to the Woman's Hospital, Sea View Hospital, etc.; Director of Pneumatology, World's Fair, New York City, and Chairman of Committee on Asphyxia of American Medical Association. Sixth Edition, Revised. 491 pages, with 161 illustrations. Price, \$6. Philadelphia and London: J. B. Lippincott Company, 1939.

To some of us it seems that the administration of a general anesthetic is the practice of medicine and that it should therefore be restricted to physicians, and not to the most junior member of the house staff either. Anesthesiology, to use the word recently coined, is indeed a most important specialty. Those already skilled in it may not need this book of Dr. Flagg's, and the man who never gives an anesthetic won't need it either. But the surgeon will be able to operate with his mind more thoroughly on his job if he knows that the anesthetist knows what is in this book.

Southerners in particular will value this volume because it reproduces facsimiles of the documents that proved Crawford W. Long first used ether for a surgical operation and that he made no secret of his discovery.

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THE TREATMENT OF FRACTURES. By CHARLES LOCKE SCUDDER, A.B., Ph.B., M.D., F.A.C.S., Consulting Surgeon to the Massachusetts General Hospital; Formerly Assistant Professor of Surgery at the Harvard Medical School; Fellow American Surgical Association; Member of the American Society of Clinical Surgery. Eleventh Edition, Revised. 1208 pages, with 1717 illustrations. Price, \$12. Philadelphia and London: W. B. Saunders Company, 1938.

Dr. Scudder has completely revised his classic text, deleting many obsolete methods of treatment. He has added new methods of treatment and diagnosis—methods which have been developed in the "automobile era" of fractures.

The book, comprehensive in its scope, includes discussions of birth injuries and pathologic and traumatic fractures, in regard to their cause, immediate and after treatment, and ultimate prognosis.

The many new illustrations increase the value of the book, for all the illustrations are helpful.

The book will be helpful to any practitioner or surgeon in meeting his fracture problems.

CLINICAL DIAGNOSIS BY LABORATORY METHODS. By JAMES CAMPBELL TODD, Ph.B., M.D., Late Professor of Clinical Pathology, University of Colorado, School of Medicine; and ARTHUR HAWLEY SANFORD, A.M., M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation); Head of Division on Clinical Laboratories, Mayo Clinic. Ninth Edition, Thoroughly Revised. 841 pages, with 368 illustrations, 29 in colors. Price, \$6. Philadelphia and London: W. B. Saunders Company, 1939.

To say that skilful pruning of the obsolete and judicious introduction of new methods have brought the ninth edition of this well known working manual of clinical pathology right up to date seems to be all that is necessary.

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MENSTRUAL DISORDERS: PATHOLOGY, DIAGNOSIS AND TREATMENT. By C. FREDERICK FLUHMAN, B.A., M.D., C.M., Associate Professor of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco, California; Assistant Visiting Obstetrician and Gynecologist to Lane and Stanford University Hospitals; Fellow of the American Gynecological Society. 329 pages, with 119 illustrations. Price, \$5. Philadelphia and London: W. B. Saunders Company, 1939.

Fluhmann has written a well ordered book covering all phases of menstruation. It is well illustrated by charts and drawings.

The first part of the book is devoted to a discussion of normal menstruation, methods of study, and the endocrine control of the menses. The remainder of the book deals with menstrual abnormalities: these are discussed as to their incidence, symptoms, prognosis and treatment.

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MARIHUANA, *America's New Drug Problem. A Sociologic Question with Its Basic Explanation Dependent on Biologic and Medical Principles.* By ROBERT P. WALTON, Professor of Pharmacology, School of Medicine, University of Mississippi. 223 pages, with 13 illustrations, 17 figures and 2 tables. Price \$3. Philadelphia: J. B. Lippincott Company, 1938.

While we have all heard of the Asiatic potentate who fed his young men on hashish to make them assassins, each of us a few years ago received a federal notice that we could not prescribe cannabis indica any more without a narcotic blank, and we have heard something of "reefers" and of a new-fangled cigarette creating addicts, few of us realized that the word *marihuana* covered the whole field or that hemp was beginning to rival opium as a problem even in America.

Dr. Walton has performed a distinct service in writing this authoritative work; it should be noted by every physician and placed in every reference library.

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ROENTGEN TECHNIQUE. By CLYDE McNEILL, M. D., Louisville. 315 pages, with 267 illustrations. Price, \$5. Springfield and Baltimore: Charles C Thomas, Publisher, 1939.

The object of this book is to enable one through a roentgenologic knowledge of anatomy to make an x-ray plate which will illustrate clearly the region in question. In fractures and various other conditions, any physician should be

able adequately to interpret a good plate. At the same time, wisely in our opinion, the author does not profess that his book will make one an expert in all forms of roentgenologic diagnosis. Lipiodol instillation and kymography are included in the recent advances in technic. While it goes without saying that there will be additional improvements and refinements in the course of time, the material presented will not become obsolete.

Relatively little space has been devoted to the technic of the machine partly because the manufacturer is glad to supply directions, partly because there are so many changes from year to year.

This intensely practical book should prove indispensable to persons who take x-rays,—and in this day and time there seems to be an increasing tendency for every doctor to be his own roentgenologist.

As is to be expected in a Thomas book, the illustrations are plentiful, wisely selected and beautifully reproduced.

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**SURGERY OF THE EYE.** By MEYER WIENER, M.D., Professor of Clinical Ophthalmology, Washington University School of Medicine, St. Louis; and BENNETT Y. ALVIS, M.D., Assistant Professor of Clinical Ophthalmology, Washington University School of Medicine, St. Louis. 445 pages, with 396 illustrations. Price, \$8.50. Philadelphia and London: W. B. Saunders Company, 1939.

This is a well written book that brings the clinical knowledge of surgery of the eye up to date. The many plates illustrate adequately, often step by step, the operative procedures described in the text.

Those chapters on plastic surgery of the lids and globe are especially good. Such chapters should prove useful to the eye surgeon in the correction of the deformities one encounters in a wide practice. There is an interesting discussion of the much publicized work on corneal transplants.

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**THE RECTUM AND COLON.** By E. PARKER HAYDEN, A. B., M. D., F. A. C. S., Assistant in Surgery in the Harvard Medical School, Boston, Massachusetts; Assistant Surgeon and Chief of Rectal Clinic, Massachusetts General Hospital, Boston, Massachusetts. 434 pages, with 169 illustrations. Price, \$5.50. Philadelphia: Lea & Febiger, 1939.

It wasn't so many years ago that a medical wit said the first duty of a consultant was to make a rectal examination. Though less apropos today, it is still essential to take a careful history with regard to the large bowel and its outlet, and certainly no examination is complete without an inspection of the anus and a digital examination of the rectum.

This book on the colon and rectum is based largely on the experience of the author and his co-workers at the Massachusetts General Hospital. It has therefore the ring of sincerity: the author has first hand knowledge of what he is talking about. At the same time he has in no sense neglected the work of other investigators. His chapter on diarrhea and idiopathic ulcerative colitis is especially good, though it is hard not to mention those on tuberculosis, and diverticulosis and lymphopathia venerea. Fifty pages can hardly be considered enough for a comprehensive discussion of carcinoma of the large bowel. In general however, the author has used excellent judgment in his selection of what to say and in the amount of space devoted to each topic. While condensation makes him appear a bit dogmatic in a few details as to which the

reviewer finds himself in mild disagreement, on the whole the conciseness of the text increases its value. The illustrations are A-1.

Dr. Hayden has written his book with a fresh enthusiasm that warms the cockles of one's heart. He makes his meaning plain throughout. It will prove most useful to the student and general practitioner: if the surgeon wishes more detailed information, adequate references are appended.

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**SURGICAL PATHOLOGY.** By WILLIAM BOYD, M. D., LL. D., M. R. C. P. Ed., F. R. C. P. Lond., Dipl. Psych., F. R. C. S., Professor of Pathology, University of Toronto. Fourth Edition, Thoroughly Revised. 886 pages, with 476 illustrations and 15 colored plates. Price, \$10. Philadelphia and London: W. B. Saunders Company, 1938.

"The surgery of today is based on pathology. Unless he builds on that solid foundation the surgeon is no better than a hewer of flesh and a drawer of blood.

"To learn technic is easy but to acquire judgment, based so largely as it must be on pathological knowledge, is a very different matter. . . . A first hand knowledge of pathology is the only safe guide for the hands of the surgeon, however skilled these hands may be."

These sentences from the first chapter of this book on surgical pathology appeal tremendously to the reviewer. Dr. Boyd evidently meant to include physiology under the head of pathology because physiologic aspects are discussed at considerable length. With this understanding, the reviewer feels that the case has been by no means overstated.

The new edition includes a considerable amount of material which had not been thoroughly worked out at the time of the previous editions so the work is brought up to the present with one exception. It is extraordinary that, now the lung has come into the realm of surgery, in spite of Dr. Boyd's various papers on the subject there is no chapter on tumors of the lung nor on bronchiectasis.

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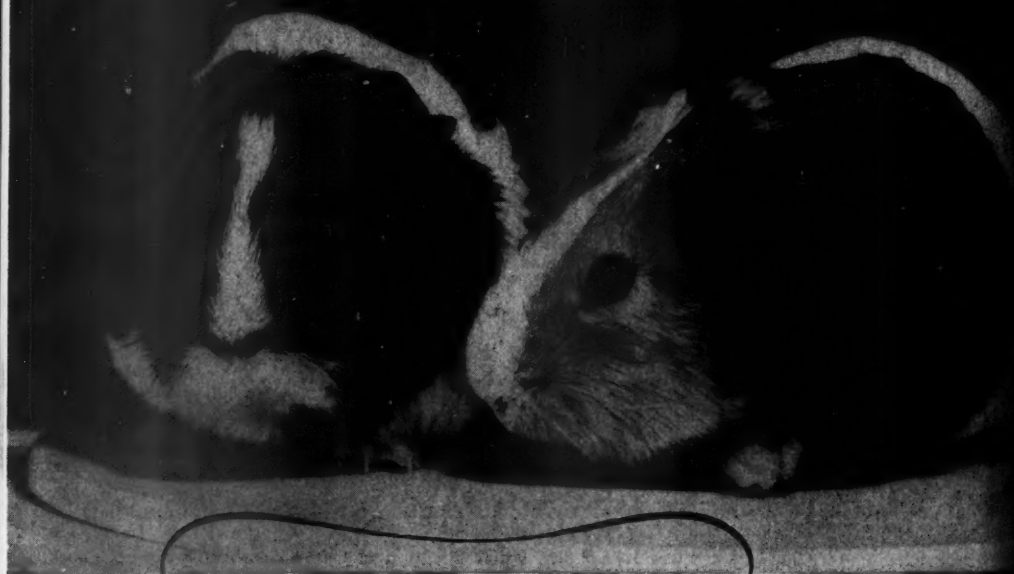
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